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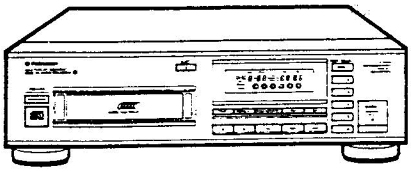
Service Manual



ORDER NO.
ARP1904

MULTI-PLAY COMPACT DISC PLAYER

PD-Z83M HEM HB SD

●Refer to the service manual ARP1665, PD-Z82M.

- This manual is applicable to the PD-Z83M/HEM, HB and SD types.

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2. CONTRAST OF MISCELLANEOUS PARTS

NOTES:
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

The PD-Z83M/HEM and HB types are the same as the PD-Z82M/HEM type with the exception of the following sections.

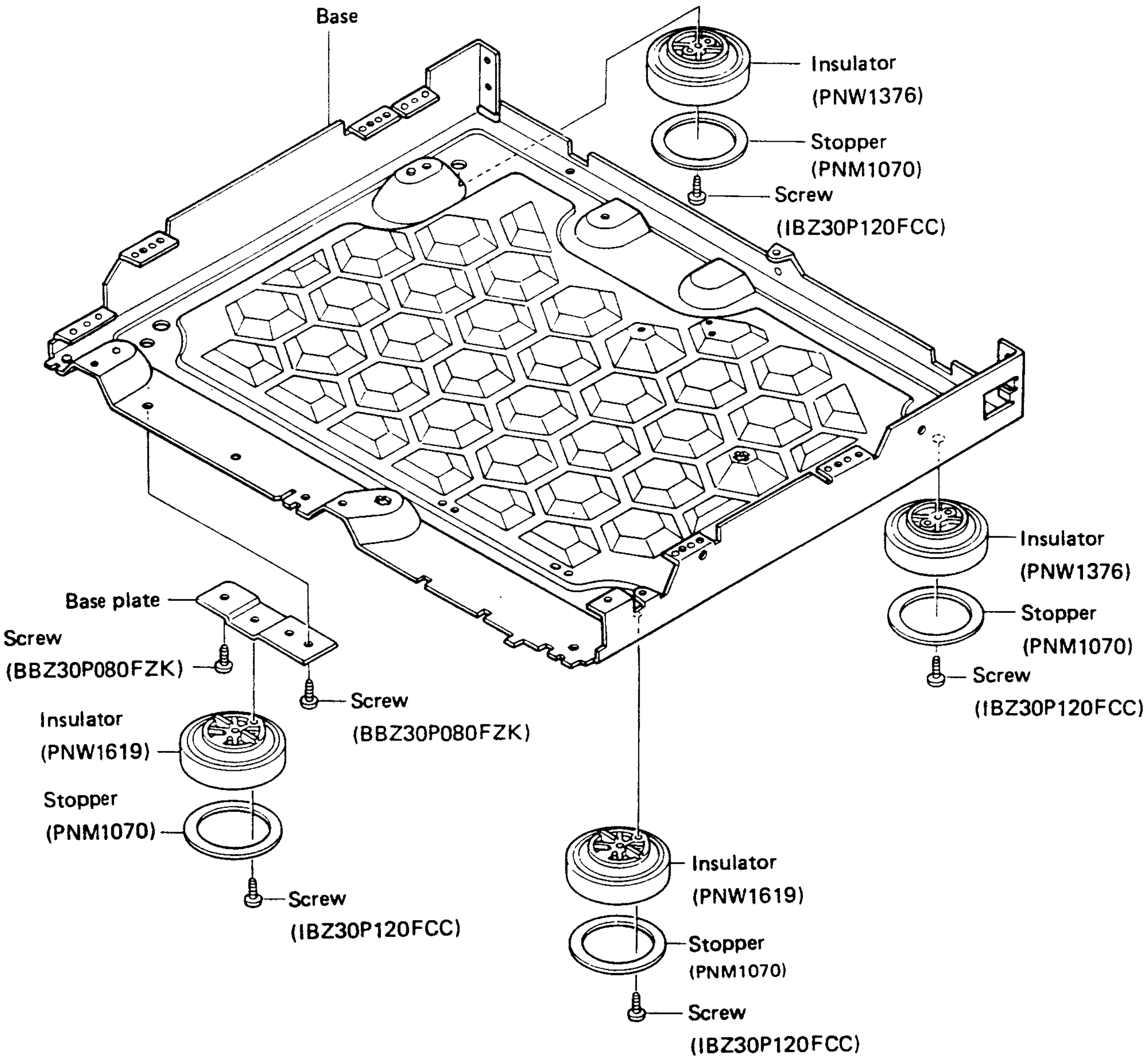
Mark	Symbol & Description	Part No.			
		PD-Z82M/HEM	PD-Z83M/HEM	PD-Z83M/HB	PD-Z83M/SD
⚠	Main board assembly	PWZ1537	PWZ1623	PWZ1623	PWZ1623
	Function board assembly	PWZ1542	PWZ1831	PWZ1831	PWZ1831
	Power switch board assembly	Non supply	Non supply	Non supply	Non supply
	Transformer board assembly	Non supply	Non supply	Non supply	Non supply
⚠	Power transformer (AC220V/240V)	PTT1069	PTT1104	PTT1104	.....
⚠	Power transformer (AC110V/120V/220V/240V)	.....	.....	.....	PTT1105
	AC power cord	PDG1008	PDG1008	PDG1021	RDG1003
	Voltage selector	.....	.....	.....	PSB1002
	Power button	PAC1343	PAC1424	PAC1424	PAC1424
	Function button	PAC1345	PAC1425	PAC1425	PAC1425
	Disc button	PAC1346	PAC1426	PAC1426	PAC1426
	Decoration plate	PAM1263	PAM1349	PAM1349	PAM1349
	Door assembly	PYY1092	PEA1011	PEA1011	PEA1011
	CD packing case	PHG1280	PHG1389	PHG1389	PHG1389
	Magazine assembly case	.....	PHG1508	PHG1508	PHG1508
	Stopper	.....	PNM1070	PNM1070	PNM1070
	Insulator	.....	PNW1376	PNW1376	PNW1376
	Insulator	.....	PNW1619	PNW1619	PNW1619
	Function panel	PNW1497	PNW1748	PNW1748	PNW1748
	Operating instructions (English/German/French/Italian/Dutch /Swedish/Spanish/Portuguese)	PRE1076	PRE1102	.....	.....
	Operating instructions (English)	.....	.....	PRB1111	PRB1111
	Operating instructions (Spanish)	.....	.....	.....	PRC1005
	Label	.....	PRW1140	PRW1140	PRW1140
	Magazine assembly	PXA1179	PXA1271	PXA1271	PXA1271
	Leg assembly	PXA1201	.....	.....	.....
	Window	PAM1262	PAM1419	PAM1419	PAM1419

POWER SWITCH BOARD ASSEMBLY

The Power switch board assemblies of PD-Z83M/HEM, HB and SD types are the same as that of PD-Z82M/HEM type for the service supply parts.

TRANSFORMER BOARD ASSEMBLY

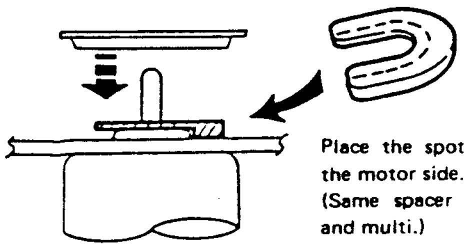
The Transformer board assemblies of PD-Z83M/HEM, HB and SD types are the same as that of PD-Z82M/HEM type for the service supply parts.


Base
Insulator
(PNW1376)
Stopper
(PNM1070)
Screw
(IBZ30P120FCC)
Insulator
(PNW1376)
Stopper
(PNM1070)
Screw
(IBZ30P120FCC)
Base plate
Screw
(BBZ30P080FZK)
Screw
(BBZ30P080FZK)
Insulator
(PNW1619)
Stopper
(PNM1070)
Screw
(IBZ30P120FCC)
Insulator
(PNW1619)
Stopper
(PNM1070)
Screw
(IBZ30P120FCC)

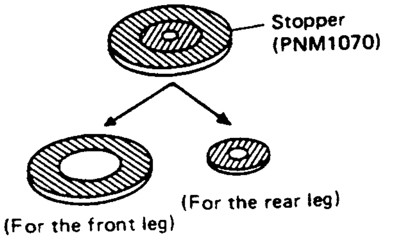
Disc table pressure-in spacer

On the plastic section of the servo mechanism, a disc table pressure-in spacer is formed. When replacing disc table and motor, cut off and use as a spacer.

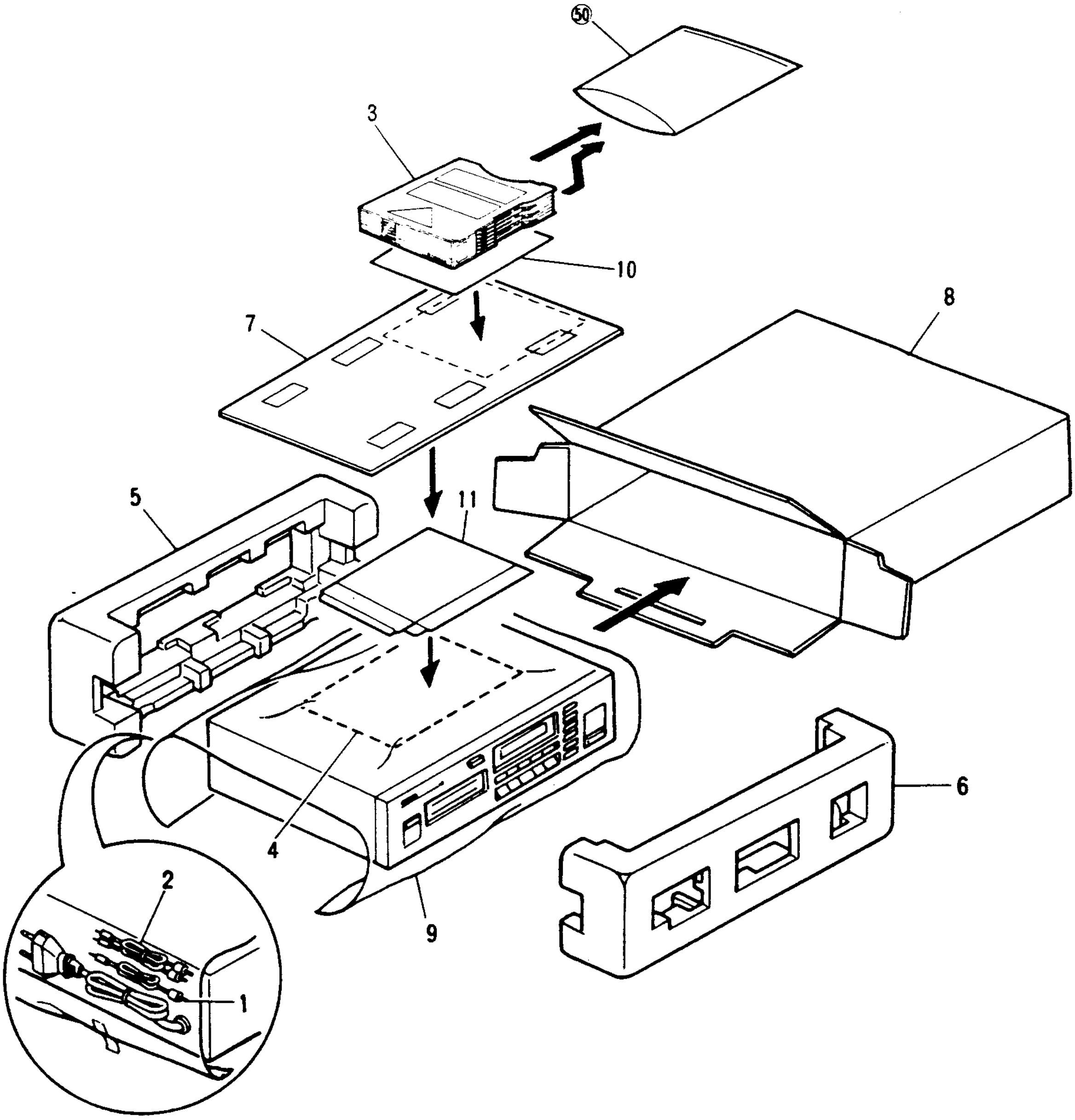
* The stopper consists of the big ring part and the small ring part.
If you stick the stopper to the leg, stick the big ring part to the front leg, and the small ring part to the rear leg.



Place the spot facing section on the motor side.
(Same spacer is O.K. for single and multi.)


Stopper
(PNM1070)
(For the rear leg)
(For the front leg)

3. PACKING



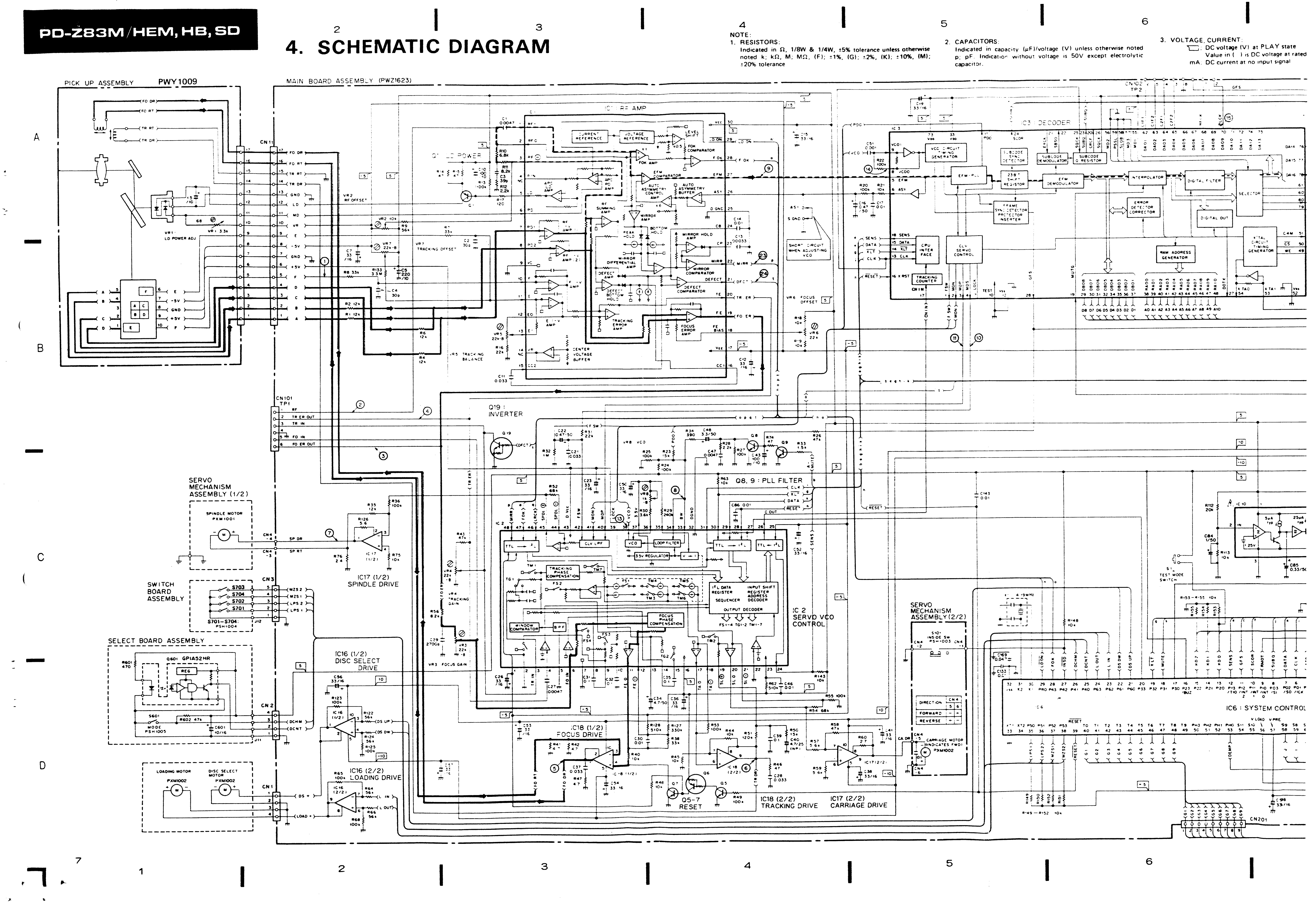
Parts List of packing

Mark	No.	Part No.	Description
	1	PDE-319	Connection cord with mini plug
	2	PDE1065	Connection cord with pin plug
	3	PXA1271	Magazine assembly
	4	PRE1102	Operating instructions (FOR HEM TYPE)
	4	PRB1111	Operating instructions (FOR HB TYPE)
	4	PRC1005	Operating instructions (For SD TYPE)
	5	PHA1026	Protector (R)
	6	PHA1091	Protector (L)
	7	PHC1008	Accessory holder
	8	PHG1389	CD packing case
	9	Z23-022	Mirror mat sheet
	10	PRW1140	Label
	11	PHG1508	Magazine assembly case
	50		Poly-bag

4. SCHEMATIC DIAGRAM

NOTE:

1. RESISTORS:
   Indicated in Ω, 1/8W & 1/4W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance
2. CAPACITORS:
   Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.
3. VOLTAGE, CURRENT:
   ⊏⊐: DC voltage (V) at PLAY state
   Value in ( ) is DC voltage at rated
   mA: DC current at no input signal

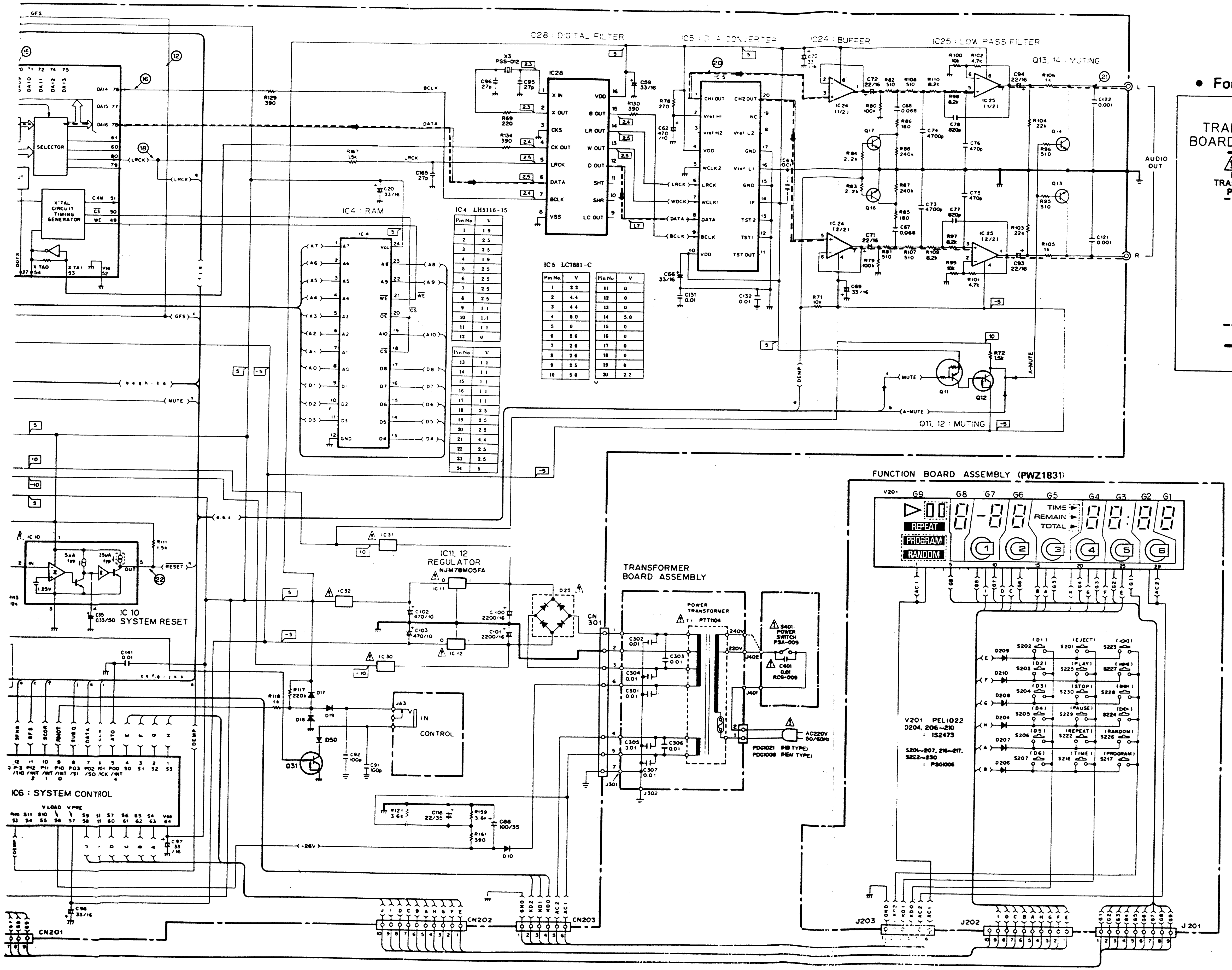

1
2
3
4
5
6
7
A
B
C
D
PICK UP ASSEMBLY PWY1009
MAIN BOARD ASSEMBLY (PWZ1623)
CN11
FO DR
FO RT
TR RT
TR DR
GND
LD
MD
VR
E
-5V
+5V
F
D
C
B
A
VR1 LD POWER ADJ
Q1 LD POWER
VR2 RF OFFSET
VR7 TRACKING OFFSET
VR5 TRACKING BALANCE
IC1 RF AMP
CURRENT REFERENCE
VOLTAGE REFERENCE
LEVEL SHIFT
FOK COMPARATOR
FOK AMP
EFM COMPARATOR
AUTO ASYMMETRY CONTROL AMP
AUTO ASYMMETRY BUFFER
APC
RF SUMMING AMP
MIRROR AMP
PEAK HOLD
BOTTOM HOLD
MIRROR HOLD AMP
MIRROR DIFFERENTIAL AMP
MIRROR COMPARATOR
DEFECT AMP
DEFECT BOTTOM HOLD
DEFECT COMPARATOR
TRACKING ERROR AMP
FOCUS ERROR AMP
CENTER VOLTAGE BUFFER
VR6 FOCUS OFFSET
SHORT CIRCUIT WHEN ADJUSTING VCO
IC3 DECODER
VCO CIRCUIT TIMING GENERATOR
EFM PLL
SUBCODE SYNC DETECTOR
SUBCODE DEMODULATOR
SUBCODE Q RESISTOR
23 BIT SHIFT RESISTOR
EFM DEMODULATOR
FRAME SYNC DETECTOR PROTECTOR INSERTER
INTERPOLATOR
DIGITAL FILTER
SELECTOR
DIGITAL OUT
ERROR DETECTOR CORRECTOR
RAM ADDRESS GENERATOR
XTAL CIRCUIT TIMING GENERATOR
CPU INTER FACE
CLV SERVO CONTROL
TRACKING COUNTER
CN101 TP1
RF
TR ER OUT
TR IN
FO IN
FO ER OUT
Q19: INVERTER
Q8, 9: PLL FILTER
IC2 SERVO VCO CONTROL
TTL → I²L
CLV LPF
VCO
LOOP FILTER
3.5V REGULATOR
TRACKING PHASE COMPENSATION
FOCUS PHASE COMPENSATION
WINDOW COMPARATOR
BPF
I²L DATA REGISTER
INPUT SHIFT REGISTER ADDRESS DECODER
SEQUENCER
OUTPUT DECODER
VR8 VCO
VR4 TRACKING GAIN
VR3 FOCUS GAIN
SERVO MECHANISM ASSEMBLY (1/2)
SPINDLE MOTOR PXM1001
SP DR
SP RT
IC17 (1/2) SPINDLE DRIVE
SWITCH BOARD ASSEMBLY
S701–S704: PSH1004
SELECT BOARD ASSEMBLY
Q601: GP1A52HR
REG
S601 MODE PSH1005
LOADING MOTOR PXM1002
DISC SELECT MOTOR PXM1002
IC16 (1/2) DISC SELECT DRIVE
IC16 (2/2) LOADING DRIVE
IC18 (1/2) FOCUS DRIVE
Q5-7 RESET
IC18 (2/2) TRACKING DRIVE
IC17 (2/2) CARRIAGE DRIVE
SERVO MECHANISM ASSEMBLY (2/2)
S101 INSIDE SW PSH1003
DIRECTION
FORWARD
REVERSE
CARRIAGE MOTOR (INDICATES FWD) PXM1002
4.19MHz
TEST MODE SWITCH
IC6: SYSTEM CONTROL
CN201
CN102 TP2
GFS

RENT:
ltage (V) at PLAY state
in ( ) is DC voltage at rated power.
rrent at no input signal

4. OTHERS:
➡ ; Signal route.
⊘ ; Adjusting point.

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
* marked capacitors and resistors have parts numbers.
The underlined indicates the switch position.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.


IC28 : DIGITAL FILTER
IC5 : D/A CONVERTER
IC24 : BUFFER
IC25 : LOW PASS FILTER
Q13, 14 : MUTING
AUDIO OUT
L
R
IC4 : RAM
SELECTOR
X'TAL CIRCUIT TIMING GENERATOR
BCLK
DATA
LRCK
WDCK
GFS
MUTE
A-MUTE
DEMP
Q11, 12 : MUTING
IC10 SYSTEM RESET
RESET
IC11, 12 REGULATOR NJM78M05FA
TRANSFORMER BOARD ASSEMBLY
POWER TRANSFORMER T1 PTT1104
S401 POWER SWITCH PSA-009
C401 0.01 RCG-009
AC220V 50/60Hz
PDG1021 (HB TYPE)
PDG1008 (HEM TYPE)
IN
CONTROL
IC6 : SYSTEM CONTROL
FUNCTION BOARD ASSEMBLY (PWZ1831)
TIME
REMAIN
TOTAL
REPEAT
PROGRAM
RANDOM
V201 PEL1022
D204, 206~210 1S2473
S201~207, 216~217, S222~230 : PSG1006
(D1) (EJECT) (PLAY) (D2) (D3) (STOP) (D4) (PAUSE) (D5) (REPEAT) (RANDOM) (D6) (TIME) (PROGRAM)
CN201
CN202
CN203
J201
J202
J203
J301
J302
J401
J402
CN301

IC4 LH5116-15

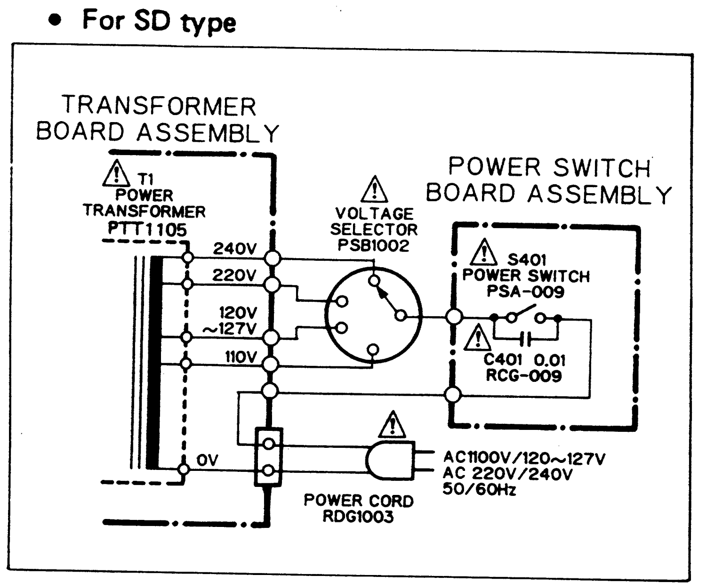
Pin No	V
1	1.9
2	2.5
3	2.5
4	1.9
5	2.5
6	2.5
7	2.5
8	2.5
9	1.1
10	1.1
11	1.1
12	0

Pin No	V
13	1.1
14	1.1
15	1.1
16	1.1
17	1.1
18	2.5
19	2.5
20	2.5
21	4.4
22	2.5
23	2.5
24	5

IC5 LC7881-C

Pin No.	V	Pin No.	V
1	2.2	11	0
2	4.4	12	0
3	4.4	13	0
4	5.0	14	5.0
5	0	15	0
6	2.6	16	0
7	2.6	17	0
8	2.6	18	0
9	2.5	19	0
10	5.0	20	2.2

• For SD type


TRANSFORMER BOARD ASSEMBLY
T1 POWER TRANSFORMER PTT1105
240V
220V
120V ~127V
110V
0V
VOLTAGE SELECTOR PSB1002
POWER SWITCH BOARD ASSEMBLY
S401 POWER SWITCH PSA-009
C401 0.01 RCG-009
AC100V/120~127V
AC 220V/240V
50/60Hz
POWER CORD RDG1003

DC voltage of Semiconductors (at PLAY state)

MAIN BOARD ASSEMBLY

IC 1	CXA1081S
IC 2	CXA1082BS
IC 3	CDX1135QZ
IC 4	LH5116-15
IC5	LC7881-C
IC6	PD4150A (μPD75212)
IC 10	M51955AL
IC 11	NJM78M05FA
IC 12	NJM78M05FA
IC 16 – IC 18	TA8410K
IC24, 25	NJM4558DX
IC28	PD0034
IC30 - 32	ICP - N10
Q 1	2SA1399
Q 5, 8, 9, 16, 17	2SC1740S
Q6, 11	DTA124ES
Q7	2SA933S
Q12, 19, 31	DTC124ES
Q13, 14	2SD1302
D10	1SR139-100
D17 - 19	1SS254
D25	WL02ML-5004
S1	PSG-064
VR 2	VRTB6VS103
VR 3 – VR 7	VRTB6VS223
VR 8	VRTS6VS102
X 1	VSS1014
X3	PSS-012

IC 10 M51955AL

Pin No.	V
1	5.0
2	1.7
3	0
4	0
5	5.0

IC 11 NJM78M05FA

Pin No.	V
(IN) 1	9.8
(GND) 2	0
(OUY) 3	5.0

Transistors

Q No.	V		
	E	C	B
Q 1	3.9	2.0	3.2
Q 5	0	0	0.7
Q 6	5.0	5.0	0
Q 7	0	−0.2	5.0
Q 8	0	0	0.7
Q 9	0	0.7	−5.0
Q 11	5.0	5.0	0
Q 12	−5.0	−5.0	5.0
Q 13	0	0	−5.0
Q 14	0	0	−5.0
Q 16	0	0	−5.0
Q 17	0	0	−5.0
Q 19	0	0	−4.9
Q 31	0	0	5.0

IC 12 NJM79M05FA

Pin No.	V
(GND) 1	0
(IN) 2	−9.6
(OUT) 3	−5.0

▶ : Measurement point

SIGNAL ROUTE :

═══ : Signal route

5. P.C. BOARD PATTERNS DIAGRAM

TRANSFORMER BOARD ASSEMBLY (FOR HEM AND HB TYPES)

IC1 CXA1081S

Pin No.	V	Pin No.	V
1	0	16	−3
2	1.3	17	−5
3	0	18	0
4	2.4	19	0
5	2.8	20	0
6	−4.8	21	−4.9
7	0	22	0
8	0	23	−1
9	0	24	−2.1
10	0	25	0
11	0	26	2.5
12	−1.2	27	2.4
13	−0.1	28	5
14	0	29	0
15	−3.1	30	5

IC2 CXA1082BS

Pin No.	V	Pin No.	V
1	−5	25	−5
2	0	26	0
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	2.5
10	0	34	2.5
11	0.2	35	2.3
12	0	36	2.3
13	0.2	37	3.5
14	0	38	2.4
15	0	39	5
16	5	40	2.5
17	0	41	5
18	0	42	2.5
19	0	43	5
20	0	44	0
21	0	45	0.45
22	0	46	2.5
23	−4.1	47	5
24	5	48	0

IC3 CXD1130QZ

Pin No.	V	Pin No.	V	Pin No.	V	Pin No.	V
1	2.5	26	5	51	2.3	76	2.3
2	5	27	2.5	52	0	77	2.3
3	2.5	28	5	53	2.2	78	1.2
4	2.8	29	1.1	54	2.2	79	2.5
5	2.4	30	1.1	55	5	80	2.5
6	2.5	31	1.1	56	0		
7	5	32	1.1	57	0		
8	2.4	33	5	58	0		
9	2.4	34	1.1	59	0		
10	0	35	1.1	60	1.3		
11	1.8	36	1.1	61	1.3		
12	0	37	1.1	62	0		
13	5	38	2.5	63	0		
14	5	39	2.5	64	0		
15	5	40	2.5	65	0		
16	5	41	2.5	66	0		
17	0	42	1.9	67	0		
18	5	43	2.5	68	2.5		
19	0	44	2.5	69	2.5		
20	5	45	1.9	70	2.3		
21	0	46	2.5	71	5		
22	0	47	2.5	72	0		
23	2.0	48	2.5	73	5		
24	0	49	4.2	74	0		
25	5	50	2.5	75	2.4		

IC6 PD4150A

Pin No.	V	Pin No.	V	Pin No.	V
1	−13.4	26	5.0	51	0
2	−17.8	27	5.0	52	5.0
3	−11.95	28	5.0	53	−5.0
4	−12.55	29	0	54	−19.7
5	0	30	2.3	55	−7.4
6	5.0	31	2.5	56	−26.1
7	5.0	32	0	57	−5.0
8	2.0	33	0	58	−22.8
9	5.0	34	5.0	59	−7.8
10	0	35	0	60	−12.7
11	5.0	36	0	61	−4.2
12	5.0	37	0	62	−5.75
13	0	38	5.0	63	−9.6
14	0	39	5.0	64	5.0
15	0	40	−23.3		
16	0	41	−23.3		
17	5.0	42	−23.3		
18	0	43	−23.3		
19	5.0	44	−23.3		
20	5.0	45	−23.3		
21	0	46	−23.3		
22	0	47	−23.0		
23	0	48	−22.9		
24	0		−25.3		
25	5.0	50	5.0		

IC16 TA8410K

Pin No.	V
1	0
2	0
3	0
4	0
5	−9.6
6	0
7	0
8	0
9	0
10	9.8

IC17 TA8410K

Pin No.	V
1	−1.05
2	−1.15
3	0
4	0
5	−9.6
6	0
7	0
8	−0.8
9	−0.6
10	9.8

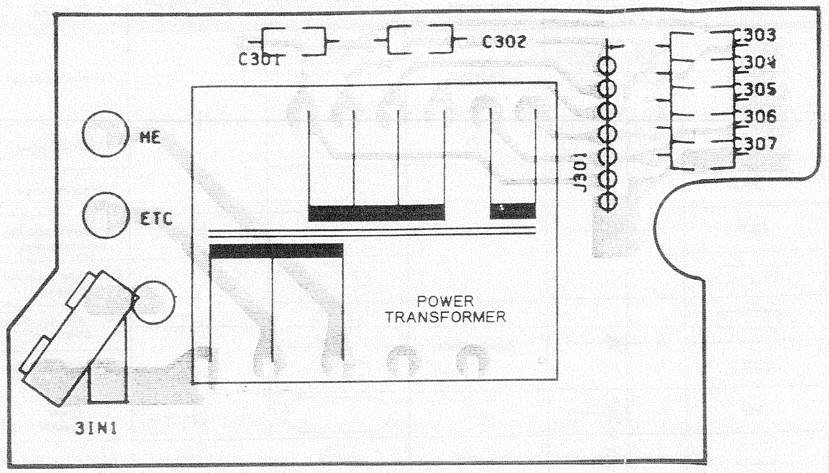
IC18 TA8410K

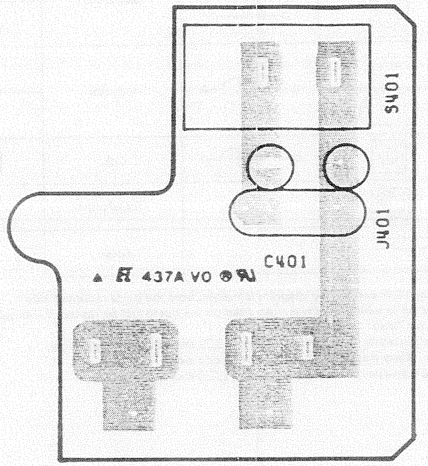
Pin No.	V
1	−1.1
2	−1.1
3	−0.2
4	−0.2
5	−9.6
6	0
7	0
8	0
9	0
10	9.8

Diodes

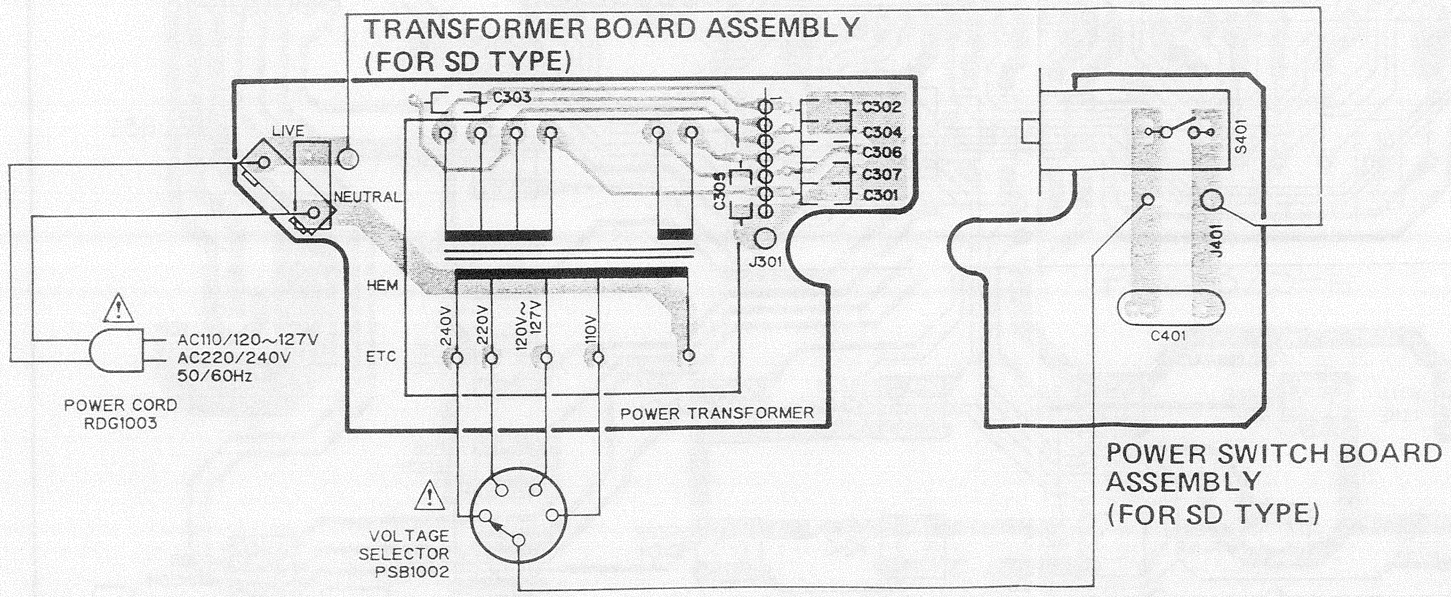
D No.	V	
	Anode	Cathode
D10	−25.6	1.0
D17	5.0	5.0
D18	0	5.0
D19	5.0	4.8
D25	1) −9.8	2) 0
	3) −9.7	4) 0
D204	−13.5	3.4
D206	−5.65	4.3
D207	−8.0	4.0
D208	−24.2	3.0
D209	−12.65	3.3
D210	−11.8	3.7

Anode ─▶├─ Cathode


C301
C302
C303
C304
C305
C306
C307
J301
HE
ETC
POWER TRANSFORMER
3IN1


S401
J401
C401
▲ Я 437A VO

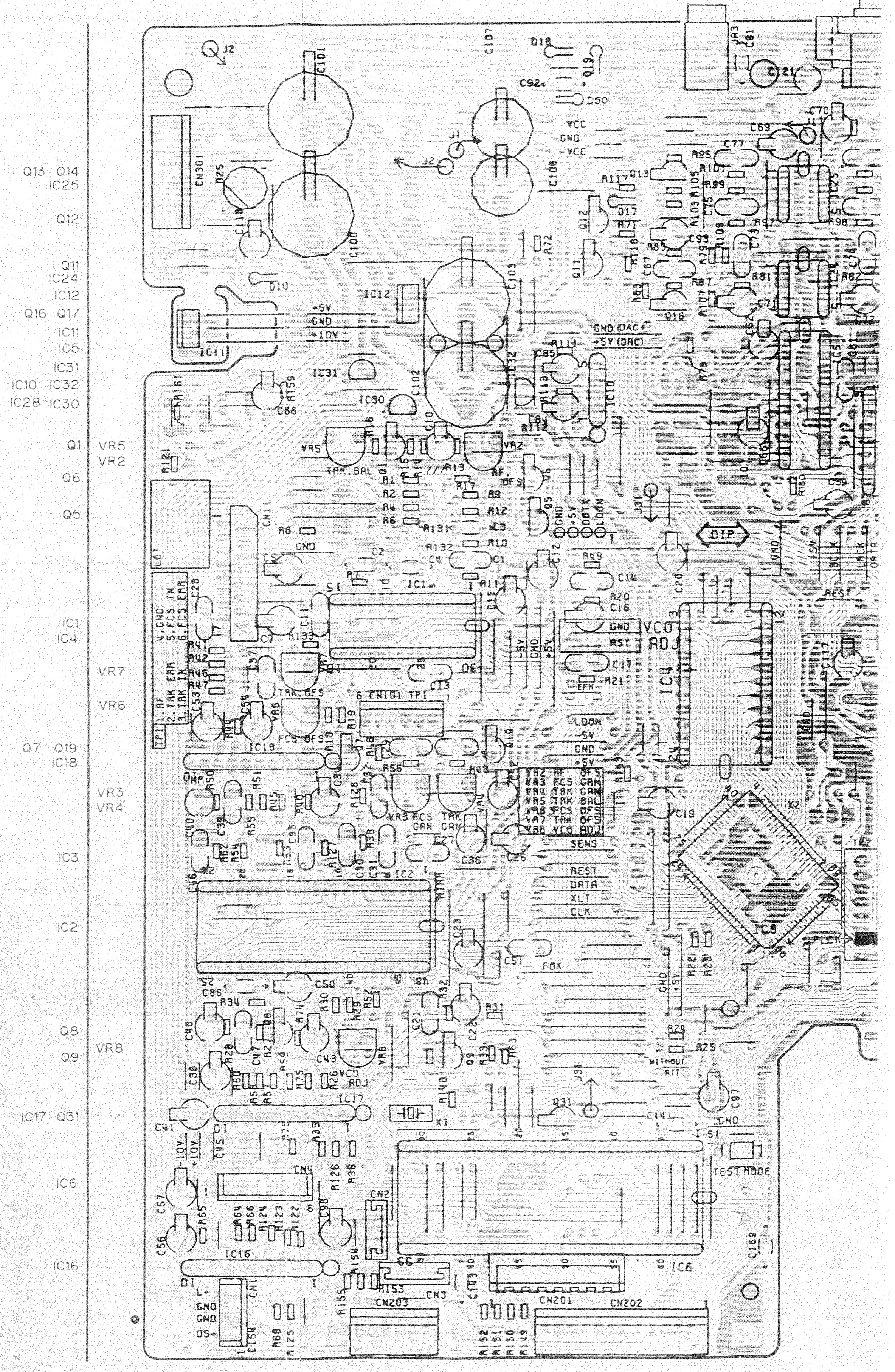
POWER SWITCH BOARD ASSEMBLY (FOR HEM AND HB TYPES)

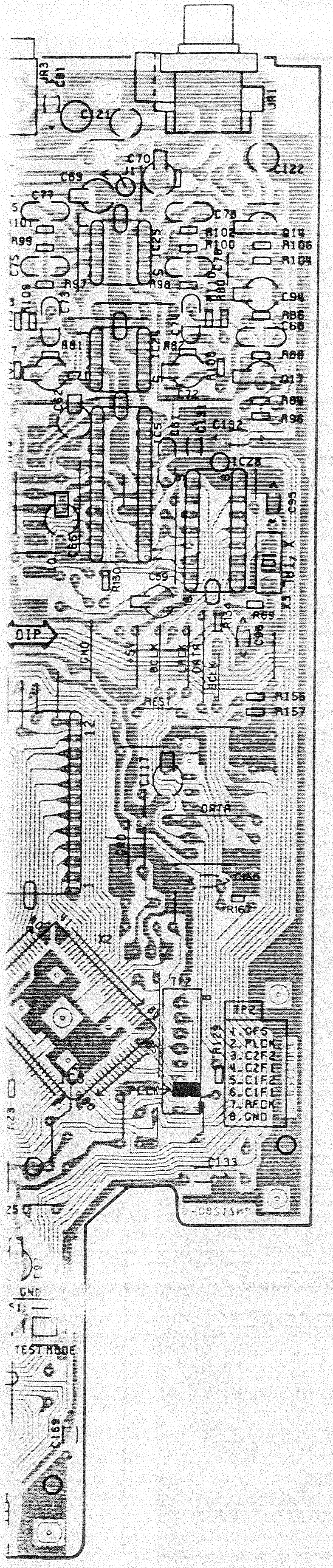

C303
C302
C304
C306
C307
C301
C305
J301
LIVE
NEUTRAL
HEM
ETC
240V
220V
120V~127V
110V
POWER TRANSFORMER
S401
J401
C401
⚠
AC110/120~127V
AC220/240V
50/60Hz
POWER CORD
RDG1003
⚠
VOLTAGE SELECTOR
PSB1002

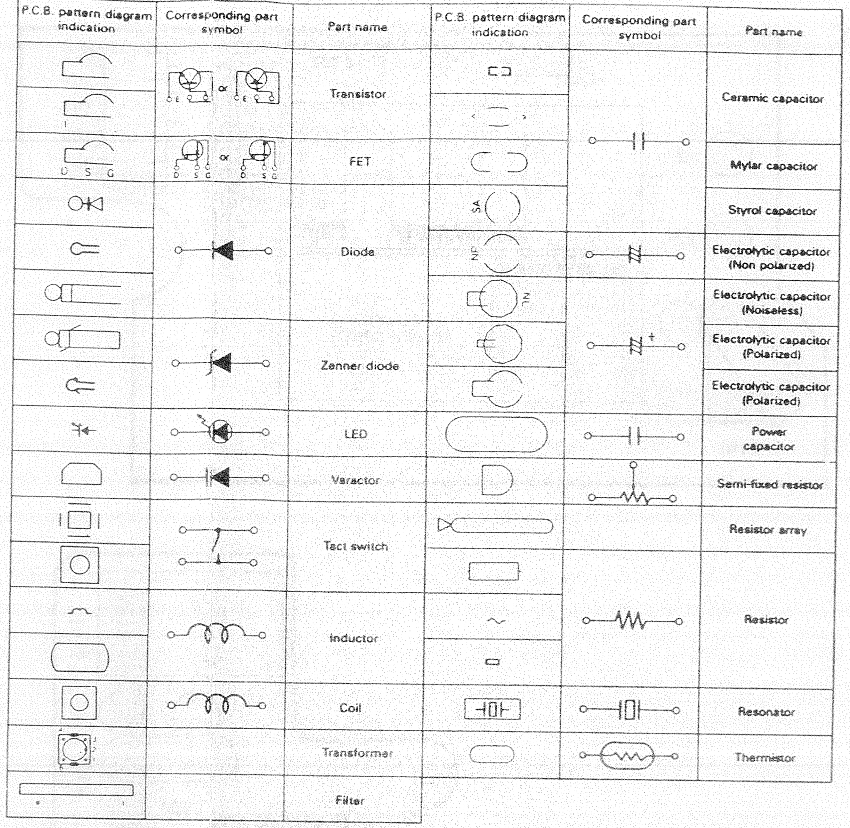
TRANSFORMER BOARD ASSEMBLY (FOR SD TYPE)

POWER SWITCH BOARD ASSEMBLY (FOR SD TYPE)

⚠⊙ MAIN BOARD ASSEMBLY (PWZ1623)


Q13 Q14
IC25
Q12
Q11
IC24
IC12
Q16 Q17
IC11
IC5
IC31
IC10 IC32
IC28 IC30
Q1
VR5
VR2
Q6
Q5
IC1
IC4
VR7
VR6
Q7 Q19
IC18
VR3
VR4
IC3
IC2
Q8
Q9
VR8
IC17 Q31
IC6
IC16
CN301
C101
C107
C100
C103
C108
C102
D18
D19
D50
C92
C121
C70
C69
C77
VCC
GND
−VCC
J1
J2
R117
Q13
R95
R101
R99
Q17
C75
R97
R85
R81
R87
Q16
C71
GND (DAC)
+5V (DAC)
IC12
IC11
IC31
IC30
+5V
GND
+10V
C88
C84
R72
VR5
TAK.BAL
VR2
R13
R9
R12
R10
R131
R132
C1
C2
C3
C4
S1
IC1
CN11
GND
C5
C7
C11
C28
C14
C16
C17
C19
C20
C117
C59
DIP
RF
OFS
4.GND 5.FCS IN 6.FCS ERR
1.RF 2.TRK ERR 3.TRK ERR
TP1
LDT
R41
R42
R46
R47
R51
R53
TRK.OFS
FCS OFS
6 CN101 TP1
VCO ADJ
IC4
LDON
−5V
GND
+5V
VR2 RF OFS
VR3 FCS GAN
VR4 TRK GAN
VR5 TRK BAL
VR6 FCS OFS
VR7 TRK OFS
VR8 VCO ADJ
SENS
REST
DATA
XLT
CLK
RST
FOK
IC2
IC3
X2
C23
C25
C27
C30
C31
C36
C37
C40
C43
C47
C49
C50
C51
C52
C54
C55
C56
C57
C85
C86
VR3 FCS GAN
TAK GAN
R21
R22
R23
R25
R26
R28
R29
R30
R31
R32
R34
R35
R36
R46
R57
R74
R122
R126
IC17
X1
C41
−10V
+10V
CN4
CN2
CN3
CN1
CN201
CN202
CN203
IC16
IC6
S1
TEST MODE
WITHOUT ATT
GND
C97
Q31
J31
C141
R151
R152
R150
R149
C169
R68
R125
C164
GND
GND
DS+
TP2
PLCK
GND
+5V
DATA
LACK
REST

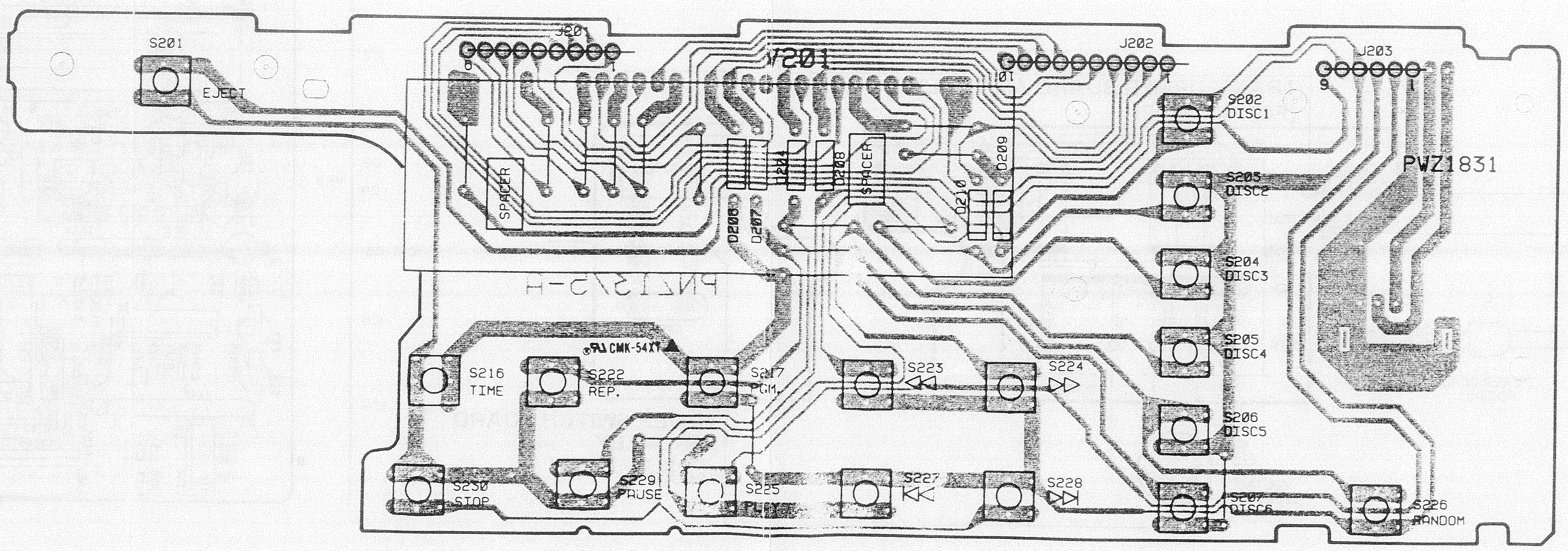

JA3
C81
C121
JA1
C70
C122
C69
C73
C76
R102
R100
Q14
R106
R104
R99
C75
R97
R98
C94
R86
C68
R81
R82
R88
Q17
R84
R96
C72
C131
C132
IC28
C95
X3
C89
R69
DIP
GND
+5V
BCLK
LRCK
DATA
R156
R157
REST
C117
DATA
GND
C166
R169
X2
TP2
1.GFS
2.PLCK
3.C2F2
4.C2F1
5.C1F2
6.C1F1
7.RFCK
8.GND
R129
C133
GND
TEST MODE
C169

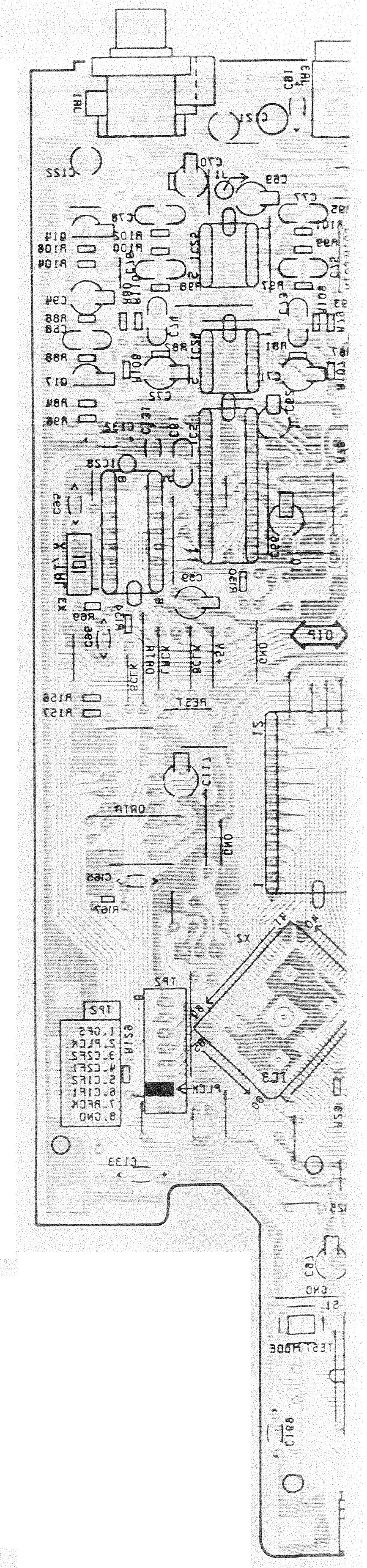


P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
	or	Transistor			Ceramic capacitor
D S G	D S G or D S G	FET			Mylar capacitor
		Diode	SA		Styrol capacitor
			NP		Electrolytic capacitor (Non polarized)
		Zenner diode	NL		Electrolytic capacitor (Noiseless)
				+	Electrolytic capacitor (Polarized)
					Electrolytic capacitor (Polarized)
		LED			Power capacitor
		Varactor			Semi-fixed resistor
		Tact switch			Resistor array
		Inductor			Resistor
		Coil			Resonator
		Transformer			Thermistor
		Filter			

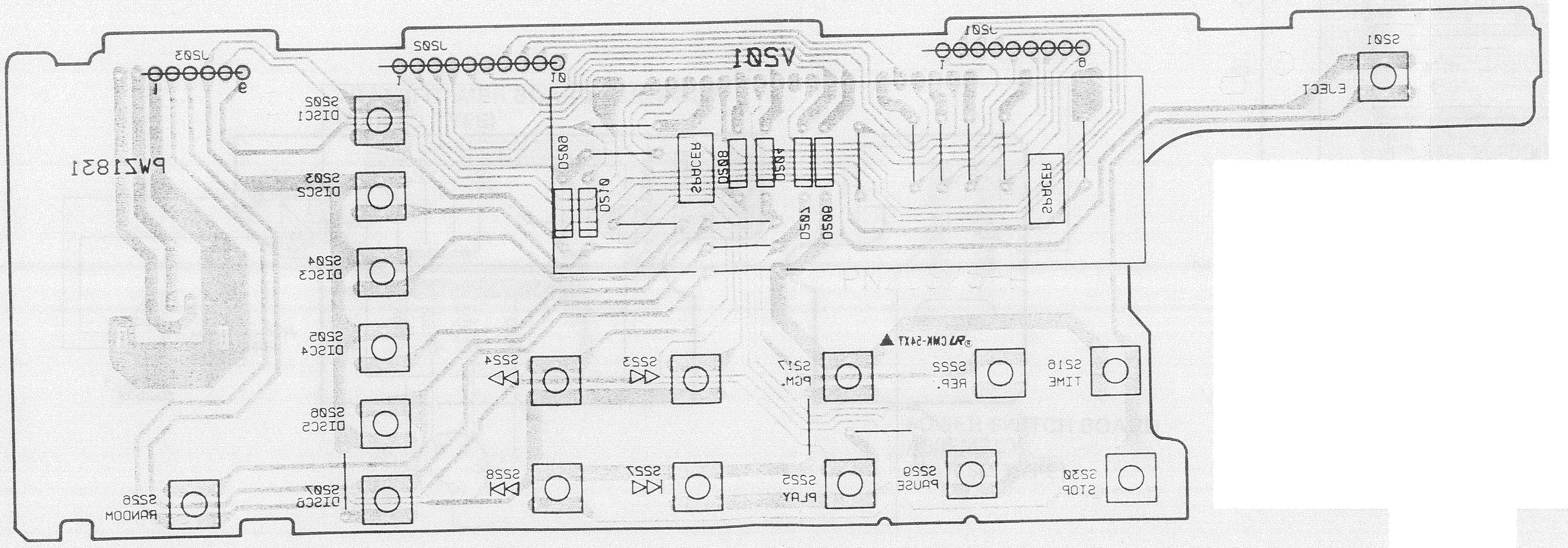
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

⊙ FUNCTION BOARD ASSEMBLY (PWZ1831)

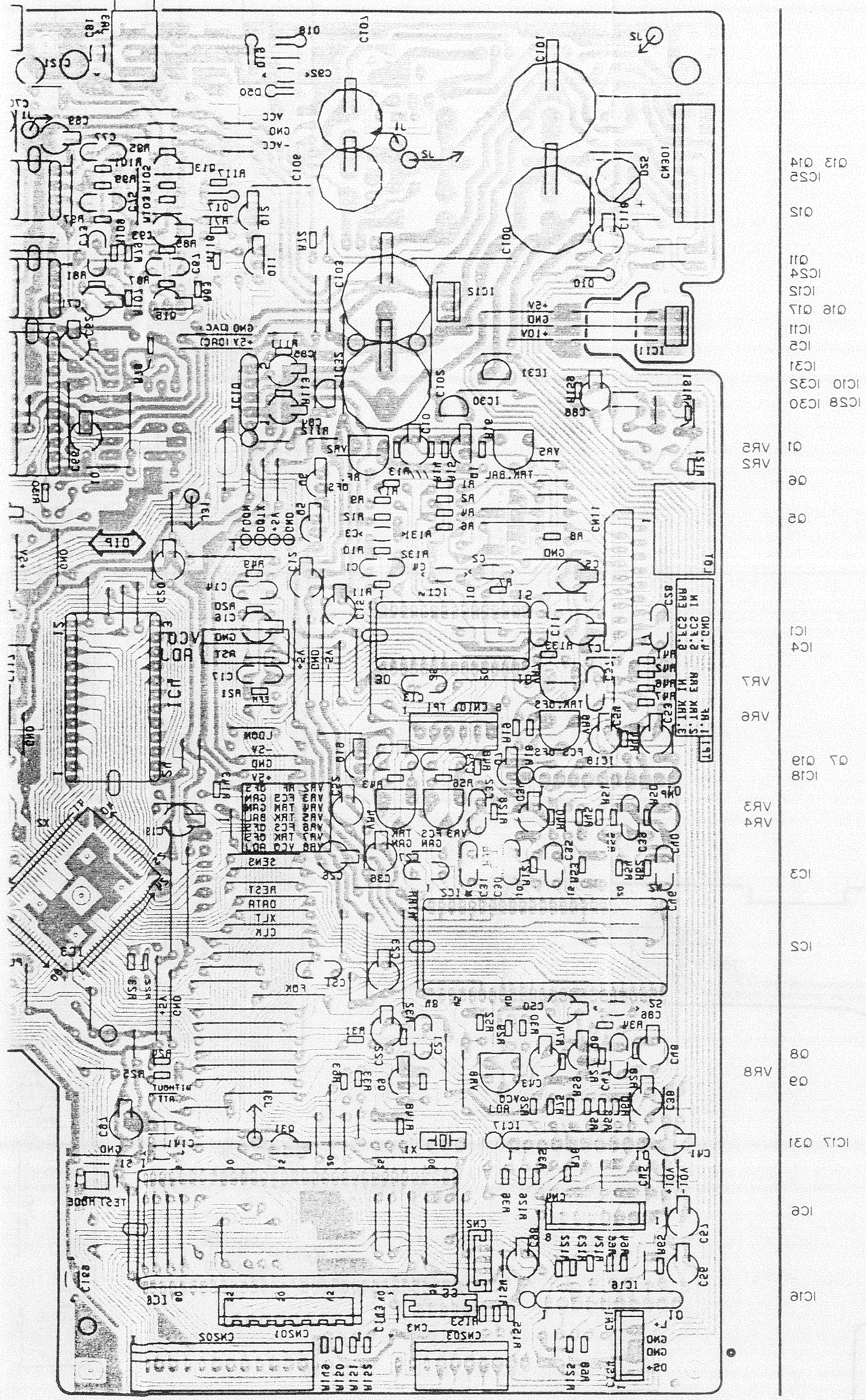

S201
EJECT
J201
6
1
V201
J202
101
J203
9
1
SPACER
D208
D207
D206
D205
SPACER
D209
D210
PWZ1831
S202
DISC1
S203
DISC2
S204
DISC3
S205
DISC4
S206
DISC5
S207
DISC6
S226
RANDOM
S216
TIME
S222
REP.
CMK-54XT
S217
PGM.
S223
S224
S230
STOP
S229
PAUSE
S225
PLAY
S227
S228



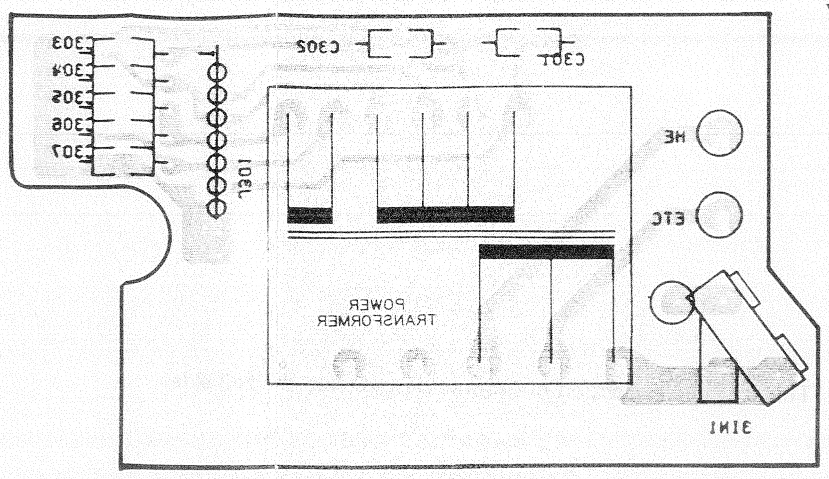
⊙ FUNCTION BOARD ASSEMBLY (PWZ1831)

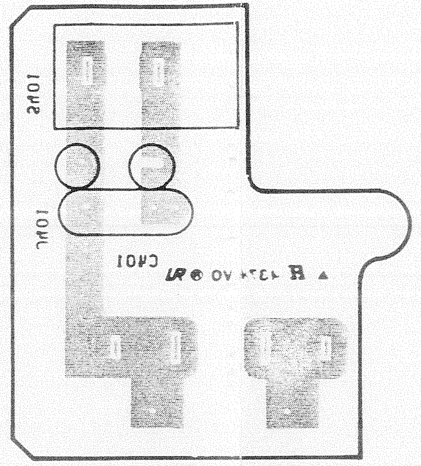

PWZ1831
V201
J201
J202
J203
S201 EJECT
S202 DISC1
S203 DISC2
S204 DISC3
S205 DISC4
S206 DISC5
S207 DISC6
S226 RANDOM
S228
S224
S227
S223
S225 PLAY
S217 PGM.
S229 PAUSE
S222 REP.
S230 STOP
S216 TIME
Q201
Q202
Q203
Q204
Q205
Q206
Q208
SPACER
CWK-547

⚠ ⊙ MAIN BOARD ASSEMBLY (PWZ1623)

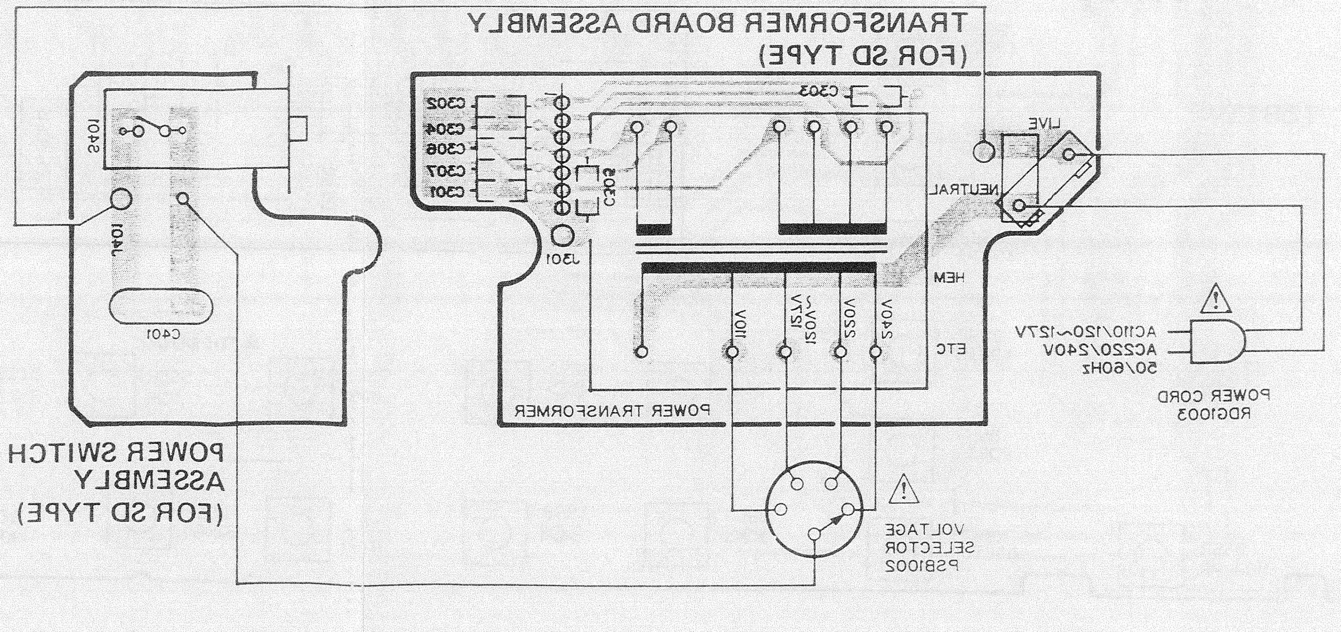


TRANSFORMER BOARD ASSEMBLY (FOR HEM AND HB TYPES)


C303
C304
C305
C306
C307
C302
C301
J301
HE
ETC
POWER TRANSFORMER
3IN1


J901
J902
CN01

POWER SWITCH BOARD ASSEMBLY (FOR HEM AND HB TYPES)


C302
C304
C308
C307
C301
C303
J301
LIVE
NEUTRAL
HEM
ETC
POWER TRANSFORMER
110V
120~127V
220V
240V
AC110/120~127V
AC220/240V
50/60Hz
POWER CORD
RDG1003
VOLTAGE SELECTOR
PSB1002
C401

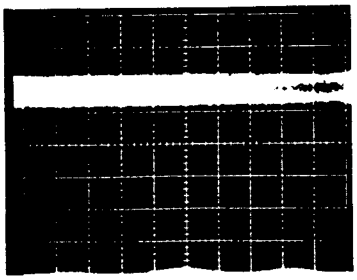
TRANSFORMER BOARD ASSEMBLY (FOR SD TYPE)

POWER SWITCH BOARD ASSEMBLY (FOR SD TYPE)

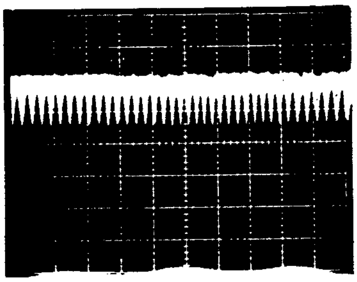
NOTE : The encircled numbers denote measuring points in the schematic diagram.

Wave Forms

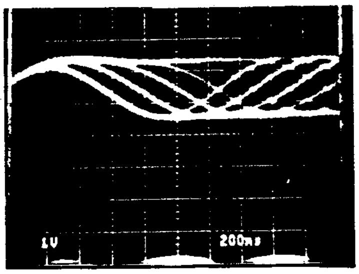
① CN11-5 Pin : PLAY MODE
50mV/div 5msec/div



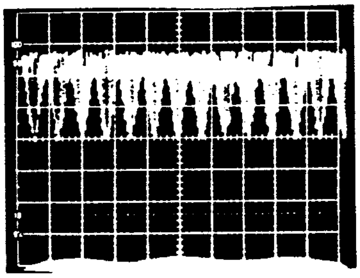
① CN11-5 Pin : SEARCH MODE
50mV/div 5msec/div



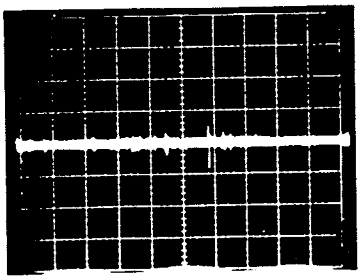
② TP1-1 Pin : PLAY MODE
1V/div 200nsec/div



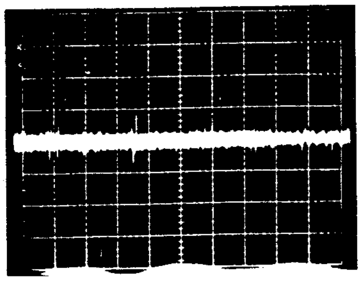
② TP1-1 Pin : SEARCH MODE
500mV/div 100μsec/div



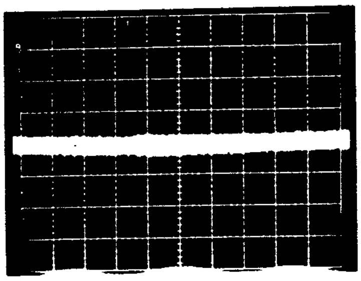
③ TP1-6 Pin : PLAY MODE
500mV/div 10msec/div



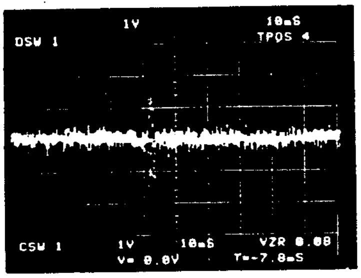
③ TP1-6 Pin : SEARCH MODE
500mV/div 10msec/div



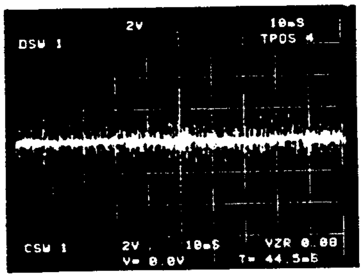
④ TP1-2 Pin : PLAY MODE
1V/div 10msec/div



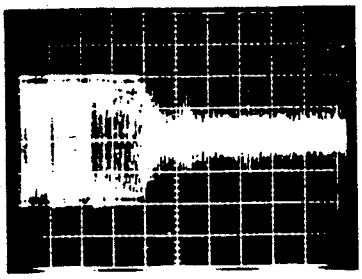
④ TP1-2 Pin : SEARCH MODE
1V/div 10msec/div



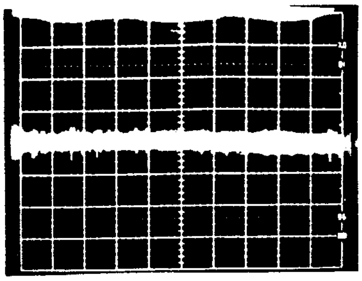
⑤ IC18-1 Pin : PLAY MODE
2V/div 10msec/div



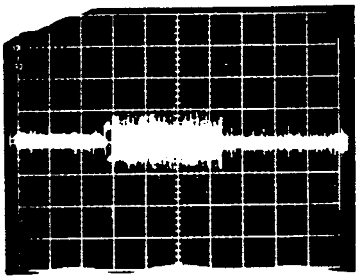
⑤ IC18-1 Pin : SEARCH MODE
2V/div 10msec/div



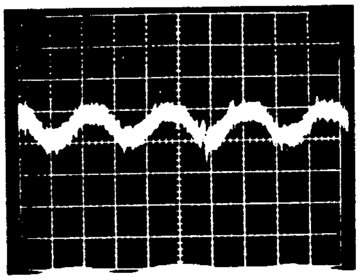
⑥ IC18-9 Pin : PLAY MODE
2V/div 10msec/div



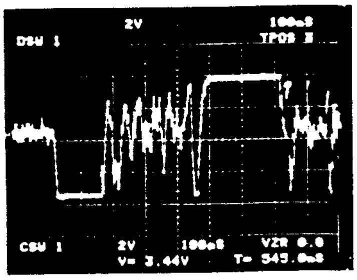
⑥ IC18-8 Pin : SEARCH MODE
2V/div 10msec/div



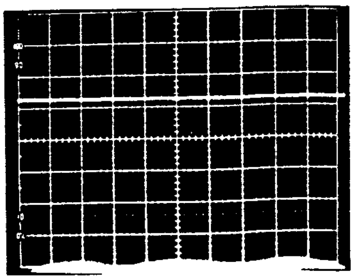
⑦ IC17-1 Pin : PLAY MODE
2V/div 50msec/div



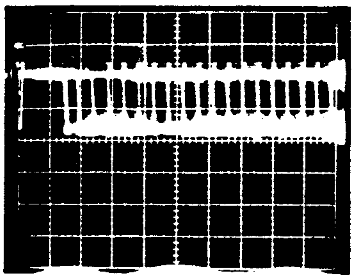
⑦ IC17-1 Pin : SEARCH MODE
2V/div 100msec/div



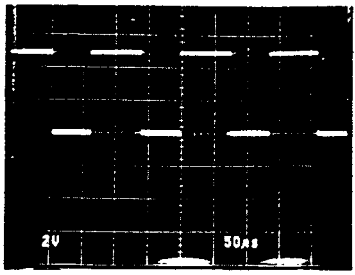
⑧ IC2-33, 34 Pin : PLAY MODE
2V/div 10msec/div



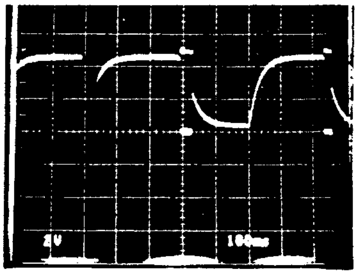
⑨ IC1-27 Pin : PLAY MODE
2V/div 500nsec/div



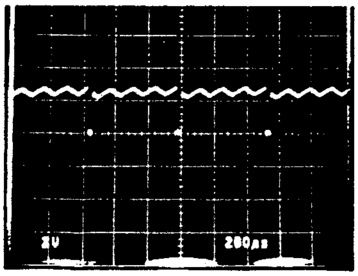
⑩ IC3-4 Pin : PLAY MODE
2V/div 50μsec/div



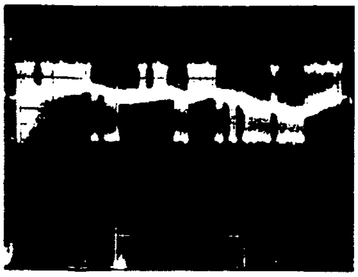
⑩ IC3-4 Pin : SEARCH MODE
2V/div 100msec/div



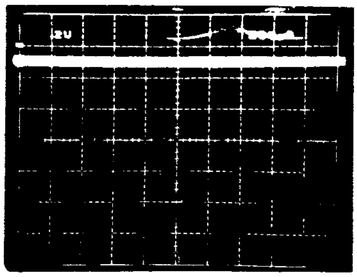
⑪ IC3-3 Pin : PLAY MODE
2V/div 200μsec/div



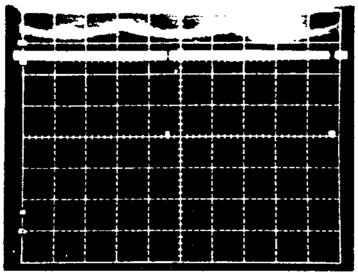
⑪ IC3-3 Pin : SEARCH MODE
2V/div 10msec/div



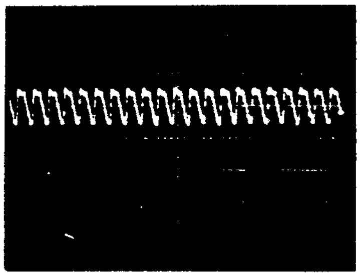
⑫ TP2-1 Pin : PLAY MODE
2V/div 200μsec/div



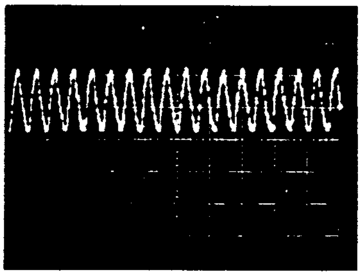
⑫ TP2-1 Pin : SEARCH MODE
2V/div 20msec/div



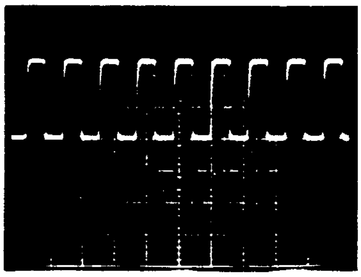
⑬ IC2-38 Pin : PLAY MODE
2V/div 200nsec/div



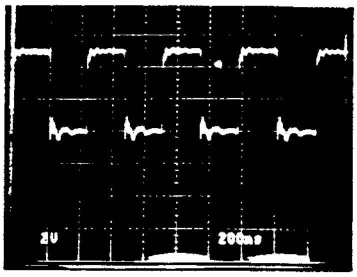
⑭ IC3-8 Pin : PLAY MODE
2V/div 200nsec/div



⑮ TP2-2 Pin : PLAY MODE
2V/div 200nsec/div

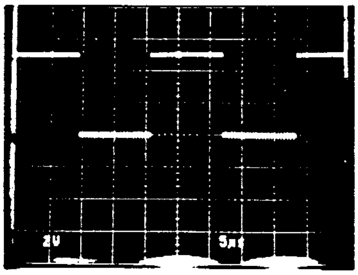


⑯ IC3-76 Pin : STOP MODE
2V/div 200nsec/div



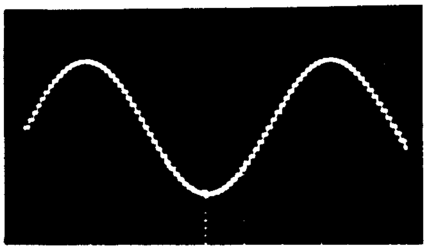
⑰

⑱ IC3-80 Pin : STOP MODE
2V/div 5μsec/div

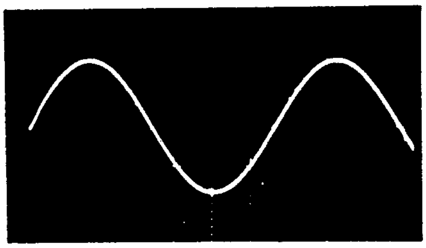


⑲

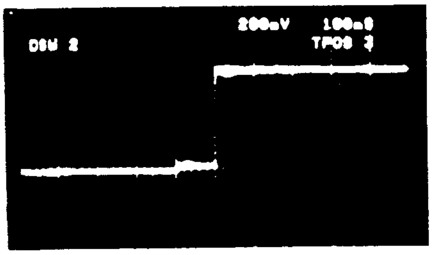
⑳ IC5-1 Pin : PLAY MODE
2V/div 50μsec/div



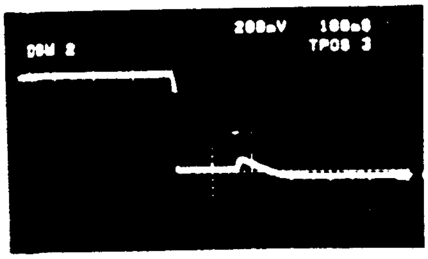
㉑ OUTPUT Lch : PLAY MODE
2V/div 50μsec/div



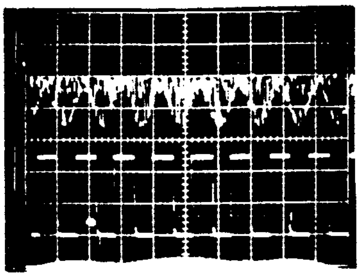
㉒ IC10-5 Pin : POWER ON
2V/div 100msec/div



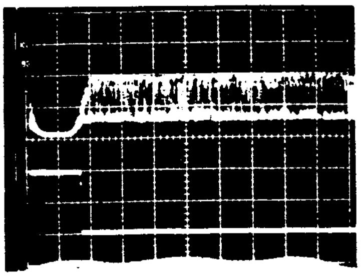
㉒ IC10-5 Pin : POWER OFF
2V/div 100msec/div



㉓ IC1-22 Pin : TRACKING OPEN
0.1msec/div
Upper TP1-1 Pin : 1V/div
Lower IC1-22 Pin : 2V/div



㉔ IC1-21 Pin : DFCT 0.5msec/div
Upper TP1-1 Pin : 1V/div
Lower IC1-21 Pin : 5V/div



6. ELECTRICAL PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω 56×10^1 561..........................RD1/4PS$\boxed{5}\boxed{6}\boxed{1}$J
47kΩ 47×10^3 473..........................RD1/4PS$\boxed{4}\boxed{7}\boxed{3}$J
0.5Ω 0R5..RN2H$\boxed{0}\boxed{R}\boxed{5}$K
1Ω 010..RS1P$\boxed{0}\boxed{1}\boxed{0}$K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ 562×10^1 5621........................RN1/4SR$\boxed{5}\boxed{6}\boxed{2}\boxed{1}$F

Miscellaneous Parts

P.C. BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
⚠ ⊙	Main board assembly	PWZ1623
⊙	Function board assembly	PWZ1831
	Power switch board assembly	
	Transformer board assembly	
	Switch board assembly	
	Select board assembly	

OTHERS

Mark	Symbol & Description	Part No.
	Pick-up assembly	PWY1009
⚠	Strain relief	CM-22B
⚠	AC power cord (HEM TYPE)	PDG1008
⚠	AC power cord (HB TYPE)	PDG1012
⚠	Power transformer (AC220V/240V)	PTT1104
	Motor assembly (DISC SELECT, DISC LOADING, CARRIAGE)	PYY1025
	Motor (DISC SELECT, DISC LOADING, CARRIAGE)	PXM1002
	Spindle motor	PXM1001
	Slide switch (INSIDE SW)	PSH1003

⊙ Main Board Assembly (PWZ1623)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC1	CXA1081S
	IC2	CXA1082BS
	IC3	CXD1135QZ
⚠	IC30–IC32	ICP-N10
	IC5	LC7881
	IC4	LH5116-15
	IC10	M51955AL
	IC24, IC25	NJM4558D
⚠	IC11	NJM78M05FA
⚠	IC12	NJM79M05FA
	IC6	PD4150A
⚠	IC16–IC18	TA8410K
	IC28	PD0034
	Q6, Q11	DTA124ES
	Q12, Q19, Q31	DTC124ES
	Q1	2SA1399
	Q7	2SA933S
	Q5, Q8, Q9, Q16, Q17	2SC1740S
	Q13, Q14	2SD1302
⚠	D25	WL02ML-5004
⚠	D10	1SR139-100
	D17–D19, D50	1SS254

SWITCH

Mark	Symbol & Description	Part No.
	S1 Tact switch	PSG-064

CAPACITORS

Mark	Symbol & Description	Part No.
	C2, C4	CCCCH300J50
	C91, C92	CCCSL101J50
	C40	CEANP4R7M25
	C16, C22	CEASR47M50
	C10, C43	CEAS101M10
	C88	CEAS101M35
	C71, C72, C93, C94	CEAS220M16
	C100, C101	CEAS222M16
	C118	CEAS220M35
	C48	CEAS3R3M50
	C7, C12, C15, C19, C20, C23, C26, C36, C38, C41, C50, C52–C54, C56, C57, C66, C69, C70, C97, C98	CEAS330M16
	C34	CEAS4R7M50

Mark	Symbol & Description	Part No.
	C102, C103	CEAS471M10
	C61, C86, C131–C133, C141, C143	CKCYF103Z50
	C169	CKCYF473Z50
	C30, C51, C121, C122	CQMA102K50
	C3	CCCCH390J50
	C95, C96, C165	CCCCH270J50
	C5, C62	CEAS221M10
	C59	CEAS330M16
	C84	CEAS010M50
	C85	CEASR33M50
	C14, C17, C46	CQMA103K50
	C31, C32, C35, C39	CQMA104K50
	C29	CQMA272J50
	C13	CQMA332J50
	C11, C21, C28, C37	CQMA333K50
	C75, C76	CQMA471J50
	C1, C27, C47, C73, C74	CQMA471J50
	C77, C78	CQMA821J50

RESISTOR

Mark	Symbol & Description		Part No.
	VR2	Semi-fixed resistor (10kΩ)	VRTB6VS103
	VR3–VR7	Semi-fixed resistor (22kΩ)	VRTB6VS223
	VR8	Semi-fixed resistor (2.2kΩ)	VRTS6VS102
	R30	Metal film resistor	RN1/6PQ3601F
		Other resistors	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description		Part No.
	JA1	2P pin jack	PKB1009
	JA3	Remote control jack	RKN1004
	X3	Crystal resonator	PSS-012
	X1	Ceramic resonator	VSS1014

⊙Function Board Assembly (PWZ1831)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	D204, D206–D210	1S2473

SWITCHES

Mark	Symbol & Description		Part No.
	S201–S207, S216, S217, S222–S230	Tact switch	PSG1006

OTHERS

Mark	Symbol & Description		Part No.
	V201	Fluorescent indicator tube	PSG1006

Power Switch Board Assembly

SWITCH

Mark	Symbol & Description		Part No.
⚠	S401	Power switch	PSA-009

CAPACITOR

Mark	Symbol & Description	Part No.
⚠	C401	RCG-009

Transformer Board Assembly

CAPACITORS

Mark	Symbol & Description	Part No.
	C301, C303	CKPYF103Z50
	C302, C304–C307	CKPYX103N25

Switch Board Assembly

SWITCHES

Mark	Symbol & Description		Part No.
	S701–S704	Slide switch (LOADING POSITION, MAGAZINE)	PSH1004

Select Board Assembly

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
	Q601	GP1A52HR

SWITCH

Mark	Symbol & Description		Part No.
	S601	Slide switch (MODE)	PSH1005

CAPACITOR

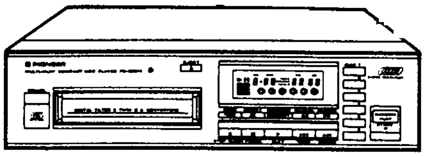
Mark	Symbol & Description	Part No.
	C601	CEAL100M16

RESISTORS

Mark	Symbol & Description	Part No.
	All resistors	RD1/6PM□□□J

PIONEER
The future of sound and vision

Service Manual



ORDER NO.
ARP1665

MULTI-PLAY COMPACT DISC PLAYER

PD-Z82M

MODEL PD-Z82M HAS FOUR VERSIONS :

Type	Power requirement	Export destination
HEM	AC 220V, 240V (switchable)*	European continent
HB	AC 220V, 240V (switchable)*	United Kingdom
SD	AC 110V, 120V - 127V, 220V, 240V (switchable)	Kingdom of Saudi Arabia and general market
HP	AC 220V, 240V (switchable)*	Australia
KU	AC 120V only	U.S.A.

* Change the connection wire from Power switch board assembly to Transformer board assembly.

CONTENTS

1. SAFETY INFORMATION 2
2. SPECIFICATIONS 4
3. PANEL FACILITIES 5
4. PACKING 8
5. EXPLODED VIEWS AND PARTS LIST 9
6. SCHEMATIC DIAGRAM 15
7. P.C. BOARDS CONNECTION DIAGRAM ... 19
8. ELECTRICAL PARTS LIST 30
9. ADJUSTMENTS 33
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AJUSTE 55
10. FOR HB, HP AND SD TYPES 66

PIONEER ELECTRONIC CORPORATION

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1. SAFETY INFORMATION

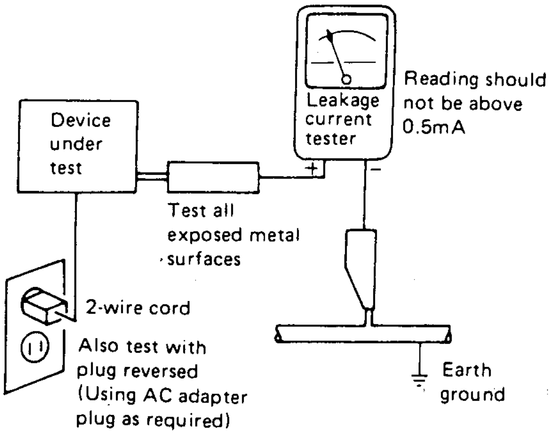
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.


Device under test
Leakage current tester
+
−
Reading should not be above 0.5mA
Test all exposed metal surfaces
2-wire cord
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

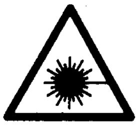
The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

(FOR EUROPEAN MODEL ONLY)

VAROITUS!

LAITE SISÄLTÄÄ LASERDIODIN, JOKA LÄHETTÄÄ NÄKYMÄTÖNTÄ, SILMILLE VAARALLISTA INFRAPUNASÄTEILYÄ LAITTEEN SISÄLLÄ ON LASERDIODIN LÄHEISYYDESSÄ KUVAN 1. MUKAINEN VAROITUSMERKKI.



LASER
Kuva 1
Lasersateilyn varoitusmerkki

ADVERSEL:

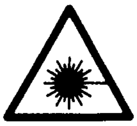
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

VIKTIGT

APARATEN INNEHÅLLER LASER AV HÖGRE KLASS ÄN 1. INGREPP I APPARATEN BÖR GÖRAS AV SPECIELLT UTBILDAD PERSONAL.

WARNING!

DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

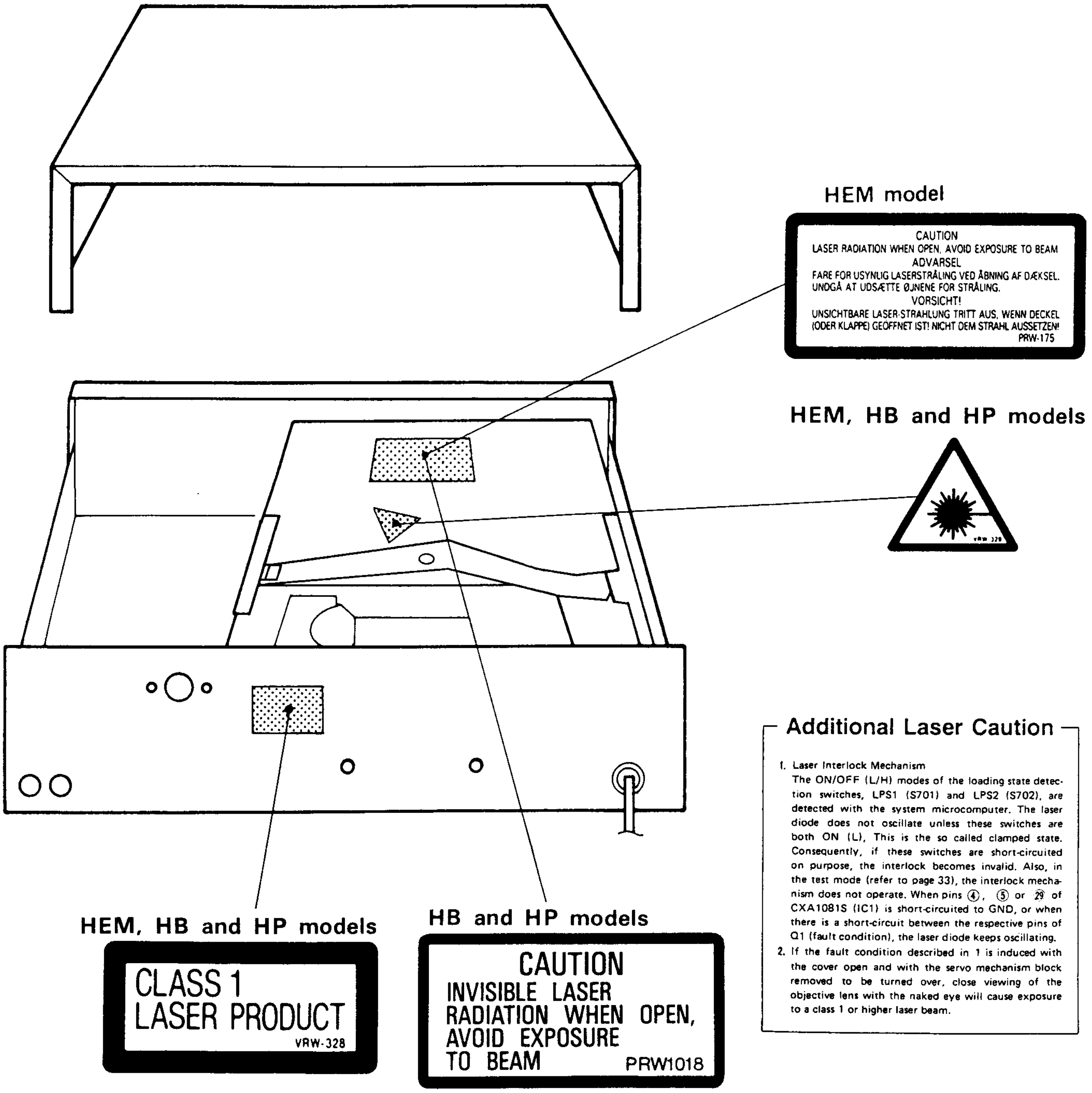


LASER
Picture 1
Warning sign for laser radiation

IMPORTANT

PIONEER COMPACT DISC PLAYER APPARATUS CONTAINS LASER OF HIGHER CLASS THAN 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LABEL CHECK



HEM model

CAUTION
LASER RADIATION WHEN OPEN, AVOID EXPOSURE TO BEAM
ADVARSEL
FARE FOR USYNLIG LASERSTRÅLING VED ÅBNING AF DÆKSEL.
UNDGÅ AT UDSÆTTE ØJNENE FOR STRÅLING.
VORSICHT!
UNSICHTBARE LASER-STRAHLUNG TRITT AUS, WENN DECKEL
(ODER KLAPPE) GEÖFFNET IST! NICHT DEM STRAHL AUSSETZEN!
PRW-175

HEM, HB and HP models

HEM, HB and HP models

CLASS 1
LASER PRODUCT
VRW-328

HB and HP models

CAUTION
INVISIBLE LASER
RADIATION WHEN OPEN,
AVOID EXPOSURE
TO BEAM PRW1018

Additional Laser Caution

1. Laser Interlock Mechanism
   The ON/OFF (L/H) modes of the loading state detection switches, LPS1 (S701) and LPS2 (S702), are detected with the system microcomputer. The laser diode does not oscillate unless these switches are both ON (L), This is the so called clamped state. Consequently, if these switches are short-circuited on purpose, the interlock becomes invalid. Also, in the test mode (refer to page 33), the interlock mechanism does not operate. When pins ④, ⑤ or ㉙ of CXA1081S (IC1) is short-circuited to GND, or when there is a short-circuit between the respective pins of Q1 (fault condition), the laser diode keeps oscillating.
2. If the fault condition described in 1 is induced with the cover open and with the servo mechanism block removed to be turned over, close viewing of the objective lens with the naked eye will cause exposure to a class 1 or higher laser beam.

2. SPECIFICATIONS

1. General

Type	Compact disc digital audio system
Usable discs	Compact Disc
DA conversion format	16-bit linear
Power requirements	
European models	AC 220V, 50/60Hz
U.K., Australian models	AC 240V, 50/60Hz
U.S., Canadian models	AC 120V, 60Hz
Other models	AC 110/120–127/220/240V (switchable) 50/60Hz
Power consumption	12W
Operating temperature	+5°C – +35°C (+41°F – +95°F)
Weight	4.5kg (9lb 15oz)
External dimensions	360(W) × 325(D) × 90(H) mm 14-3/16(W) × 12-25/32(D) × 3-17/32(H) in

2. Audio section

Frequency response	4Hz–20kHz ($^{+0.5}_{-1.0}$dB) (EIAJ)
SN ratio	more than 100dB (EIAJ)
Dynamic range	more than 92dB (EIAJ)
Channel separation	more than 93dB (EIAJ)
Wow and flutter	less than (±0.001% W.PEAK) (below measurable level) (EIAJ)
Channels	2-channel (stereo)

3. Output Terminal

Audio line output

4. Functions

Number of discs to be stored — maximum 6.

Basic operation keys
- PLAY, PAUSE, STOP/CLEAR

Search function
- Disc selection (6 keys)
- Manual search
- Track search

Programming
- Maximum 32 steps
- Pause
- Direct programming
- Program clear

Timer start
- Timer start play

Repeat functions
- All-discs repeat
- Program repeat
- 1-disc repeat (with program)
- Track repeat (with program)
- Random play repeat

Random Play
- Random play

Switching display
- Time consumed, remaining time, and total time

5. Display

FL tube display
- Passing time display (min, sec)
- Remaining time display
- Total time display
- Disc number, track number
- Program step number
- Program indicator
- Repeat indicator
- Random play indicator
- Play indicator
- Pause indicator
- Disc mark

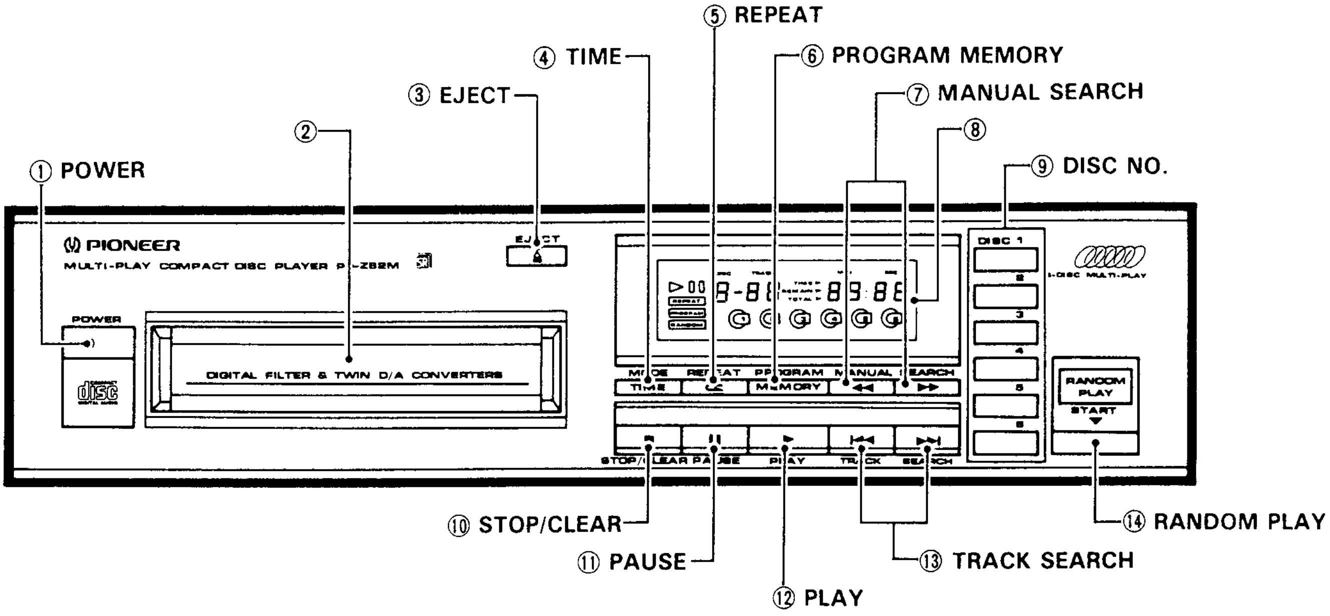
6. Accessories

● Six-compact-disc magazine	1
● Control cord	1
● Output cable	1
● Operating instructions	1

NOTE:
Specifications and design subject to possible modification without notice, due to improvements.

3. PANEL FACILITIES

FRONT PANEL


⑤ REPEAT
④ TIME
⑥ PROGRAM MEMORY
③ EJECT
⑦ MANUAL SEARCH
②
⑧
① POWER
⑨ DISC NO.
PIONEER
MULTI-PLAY COMPACT DISC PLAYER
EJECT
POWER
DIGITAL FILTER & TWIN D/A CONVERTERS
MODE
REPEAT
PROGRAM
MANUAL SEARCH
TIME
MEMORY
DISC 1
2
3
4
5
6
6-DISC MULTI-PLAY
RANDOM PLAY
START
STOP/CLEAR
PAUSE
PLAY
TRACK SEARCH
⑩ STOP/CLEAR
⑪ PAUSE
⑫ PLAY
⑬ TRACK SEARCH
⑭ RANDOM PLAY

① POWER switch

Press to turn power to the unit ON and OFF.

② Magazine insertion slot

③ EJECT key

Press to eject a magazine. When pressed, any magazine inside is expelled forward.

④ TIME key

- Use to select the method for displaying the playing time on the indicator panel.
  Each time the key is pressed, the indication changes from TIME, REMAIN (track remain) and REMAIN (disc remain: This will not be displayed during programmed playback) to TOTAL in that order. (For details concerning the display contents, refer to the explanation about the indicators.)

⑤ REPEAT key (⊂⊃)

Press to perform repeat playback.

- If pressed during normal playback mode, all tracks on all the discs in the magazine will be played back repeatedly.
- If pressed during programmed playback, the programmed tracks will be repeatedly played back in the programmed order.
- In the case of random playback mode, after all the tracks have been played, random playback will start again.

⑥ PROGRAM MEMORY key

Use to program a sequence of tracks.

- Press this key after selecting a desired disc and track with DISC NO. and TRACK SEARCH keys. Tunes will be added to the program in the order in which they are specified.
- If only a DISC NO. key is pressed, all tracks on the specified disc will be added to the program. The letters 'AL' will appear on the indicator.

⑦ MANUAL SEARCH keys

When the player is in playback or pause modes, these keys are pressed to perform fast forward or reverse operations, to allow manual searching. These operations are done only during the time either key is pressed.

[▶▶] : For fast forward operation. If the end of the disc is reached during fast forward operation, 'End' will be displayed and the player will enter the pause mode. [During programmed playback, the player will enter the pause mode right before it reaches the next track (program step).]

[◀◀] : For fast reverse operation. If the beginning of the disc is reached during fast reverse operation, the player will enter the playback mode. [During programmed playback, the player will enter the playback mode right before it reaches the previous track (program step).]

⑧ Indicators

▷ (PLAY) : Lights during playback.
▯▯ (PAUSE) : Lights during pause mode, when playback is temporarily interrupted.
REPEAT : Lights during repeat playback.
PROGRAM : Lights after programming (after program has been memorized).
RANDOM : Lights during random playback.
DISC : Indicates disc number (1 – 6) during playback or search.
TRACK : Indicates track number (01 – 99) during playback or search.

TIME/REMAIN/TOTAL

: Changes each time the TIME key is pressed.

- TIME : Displays the track number of the track being played and the playback time (minutes and seconds).
- REMAIN : Displays the remaining time on the track being played.
  When the TIME key is pressed again, the remaining time on the disc will be displayed.
- TOTAL : Displays the total number of tracks on one disc (TRACK) and the overall playback time (MIN, SEC).

During programmed playback operation, displays the playing time, the remaining time of the track being played and the total program steps (TOTAL).

MIN : Playing or remaining time for the track indicated by the minute.

SEC : Playing or remaining time for the track indicated by the second.

DISC Symbol (◎)
: If a nonexistent disc is searched for, the corresponding disc symbol will go off.

⑨ DISC NO. keys (Disc number 1 – 6)

Use to select disc numbers for playback or programming.

⑩ STOP/CLEAR key (■)

Press to stop playback. When pressed, the player goes into stop mode and all operations stop.
When pressed during stop mode, the program stored in memory is cleared.

⑪ PAUSE key (▮▮)

Press to temporarily interrupt playback. When pressed again, the pause mode is cancelled and playback resumes.

⑫ PLAY key (▶)

Press to begin playback, and to cancel the player from the pause mode.

⑬ TRACK SEARCH keys

When the player is in the normal playback, programmed playback or pause modes, these keys are pressed to search for a desired track. Pressing either key causes the player to advance to the next track, or return to the previous track.

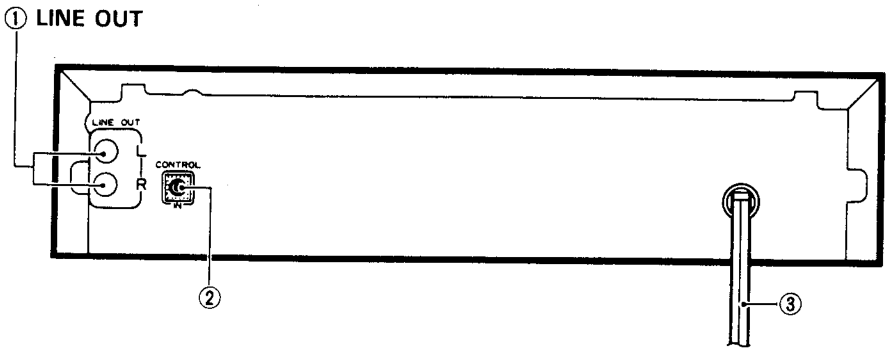
[▶▶|] : When pressed once, play restarts at to the beginning of the next track on the disc; when pressed continuously, the disc playback shifts to the beginning of succeeding tracks on the disc. (During programmed playback, it moves to the beginning of the next programmed track.)

[|◀◀] : When pressed once, the disc playback returns to the beginning of the currently playing track; when pressed continuously, the disc playback shifts to the beginning of previous tracks on the disc. (During programmed playback it returns to the beginning of the previous programmed track.)

⑭ RANDOM PLAY key

Press to begin random playback.

REAR PANEL



① LINE ONT terminal

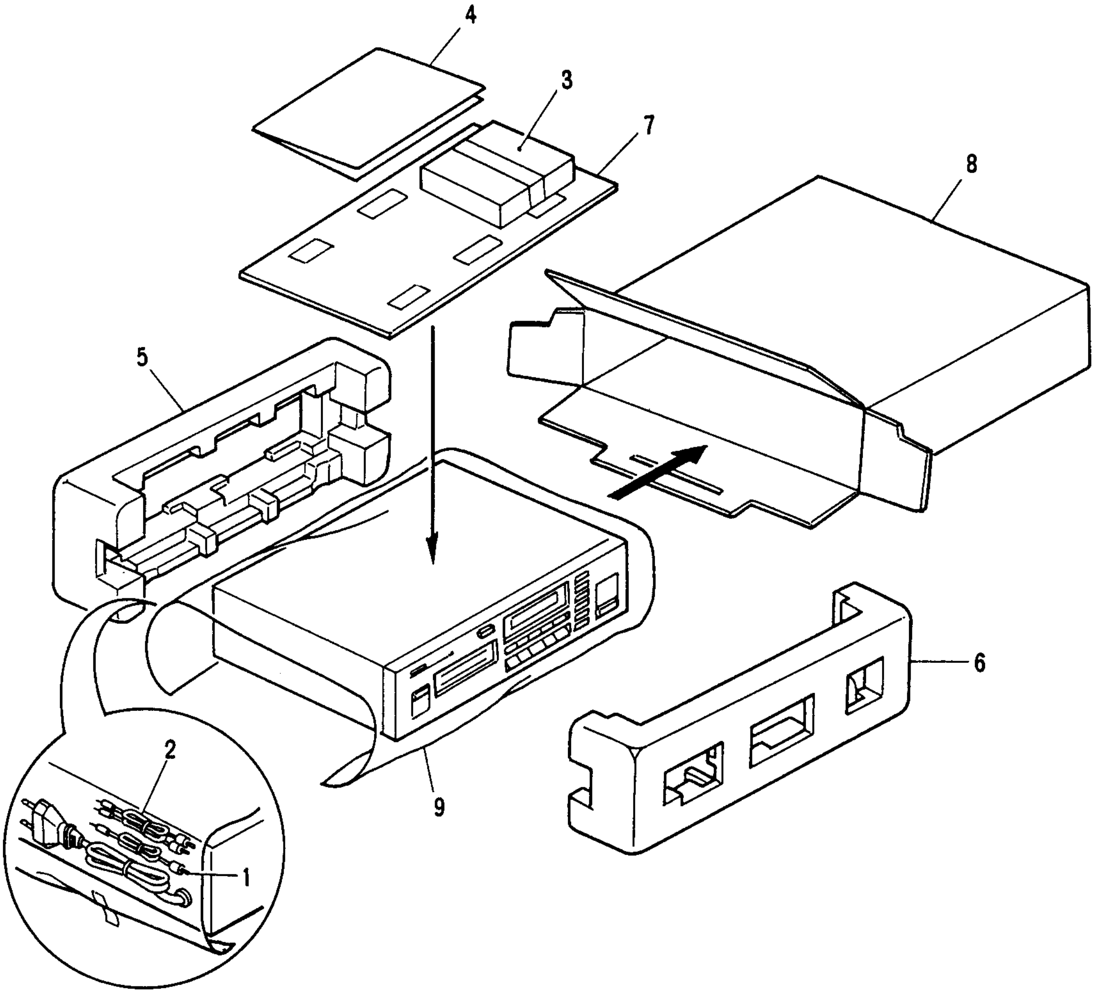
② CONTROL IN terminal

This terminal is for inputting the remote control signals relayed from an amplifier with a sensor for receiving control signals from a remote control unit and carrying the Pioneer SR mark. For instructions regarding connection and operation, please refer to the operating instruction manual for your stereo amplifier.

③ Power cord

4. PACKING

NOTES:
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*



Parts List of packing

Mark	No.	Part No.	Description
	1	PDE-319	Connection cord with mini plug
	2	PDE1023	Connection cord with pin plug
	3	PXA1179	Magazine assembly
	4	PRE1076	Operating instructions
	5	PHA1026	Protector (R)
	6	PHA1091	Protector (F)
	7	PHC1008	Accessory holder
	8	PHG1280	CD packing case
	9	Z23-007	Mirror mat sheet

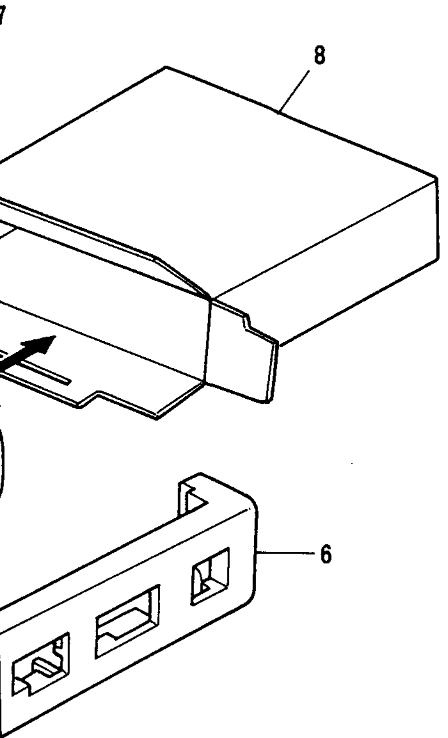
5.

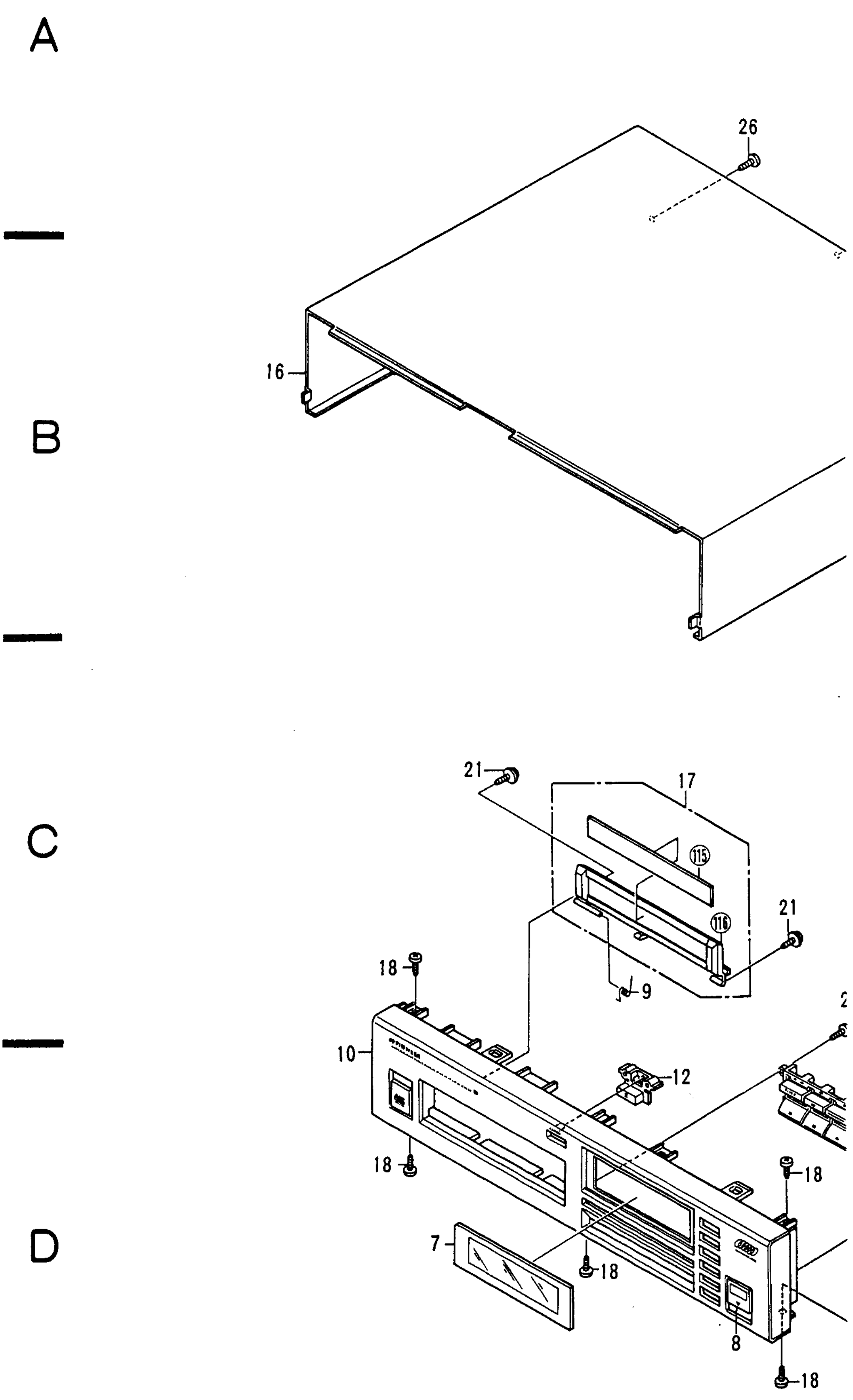
5.1

5. EXPLODED VIEWS AND PARTS LIS

5.1 EXTERIOR

e safety
designa-




A
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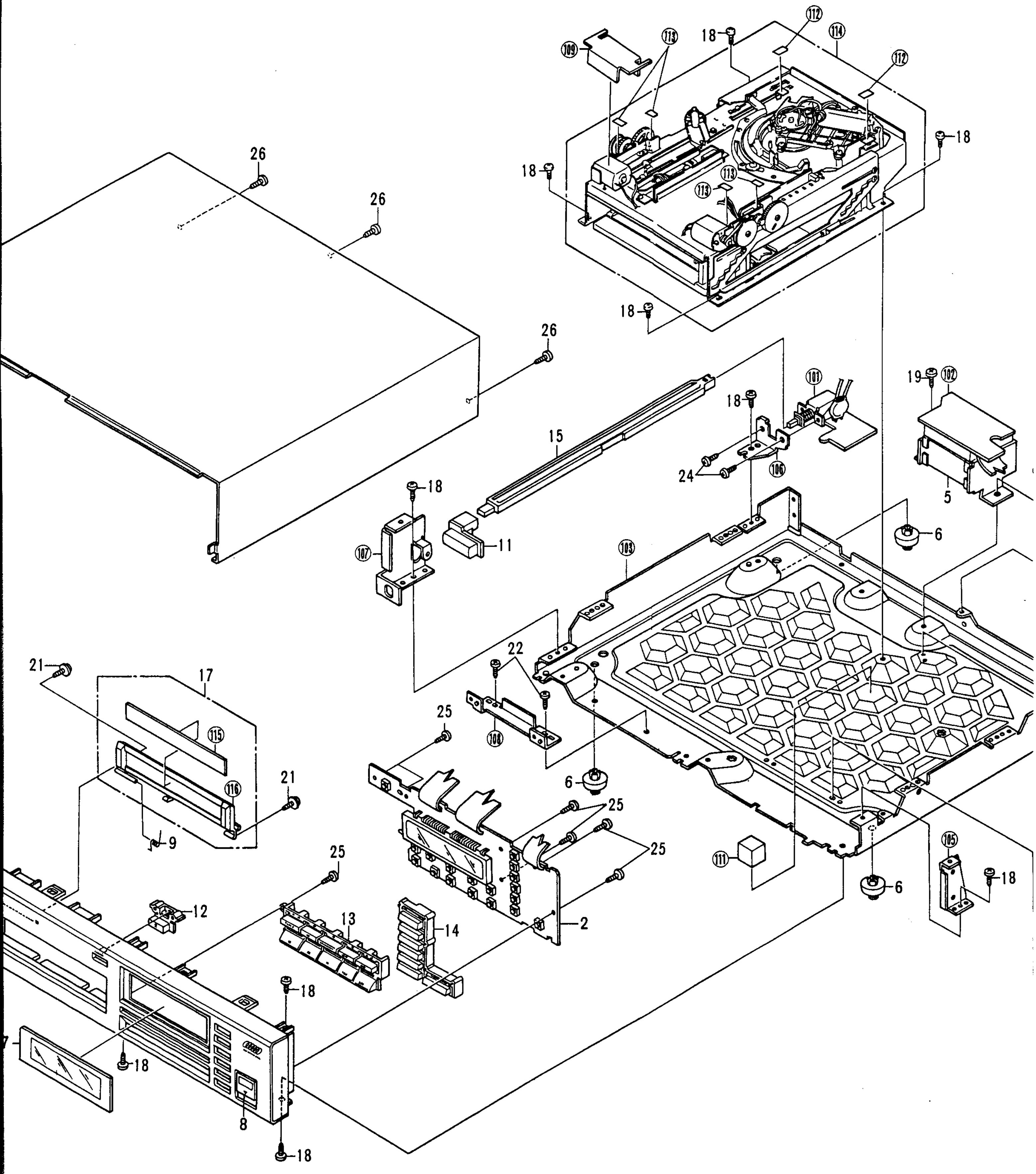
2

EWS AND PARTS LIST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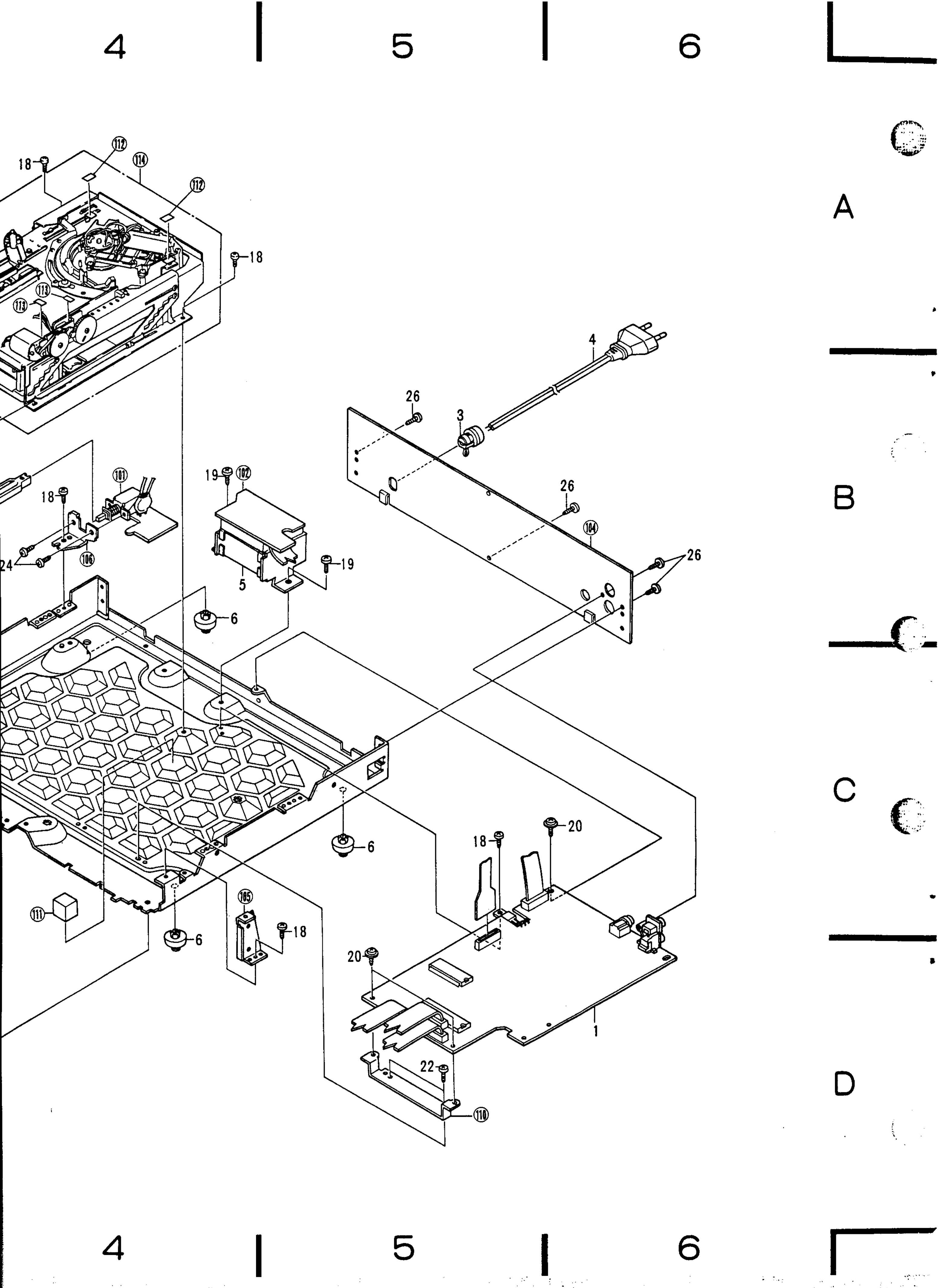
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(104)
(106)
(105)
(111)
(110)

NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Parts List of Exterior

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
⚠ ⊙	1	PWZ1537	Main board assembly		101		Power switch board assembly
⊙	2	PWZ1542	Function board assembly		102		Transformer board assembly
⚠	3	CM-22B	Strain relief		103		Base
⚠	4	PDG1008	AC power cord		104		Rear panel
	5	PTT1069	Power transformer (AC220/240V)		105		Angle
	6	PXA1201	Leg assembly		106		Switch angle
	7	PAM1262	Window		107		Front angle (A)
	8	PAM1263	Decoration plate		108		Angle (P)
	9	PBH1022	Door spring		109		Shield plate (M)
	10	PNW1497	Function panel		110		P.C.B angle
	11	PAC1343	Power button		111		Cushion
	12	PAC1344	Eject button		112		Button sheet
	13	PAC1345	Function button		113		Felt
	14	PAC1346	Disc button		114		Multi mechanism assembly
	15	PNY-528	Power SW joint		115		Door name plate
	16	PYY1087	Bonnet		116		Door
	17	PYY1092	Door assembly				
	18	BBZ30P080FZK	Screw				
	19	BBZ40P060FMC	Screw				
	20	IBZ30P060FCC	Screw				
	21	IPZ30P060FMC	Screw				
	22	PCZ30P050FZK	Screw				
	23	PEC-107	Binder				
	24	PMZ30P060FMC	Screw				
	25	PPZ30P100FMC	Screw				
	26	BBZ30P080FCC	Screw				

5.2 M

Parts L

Mark

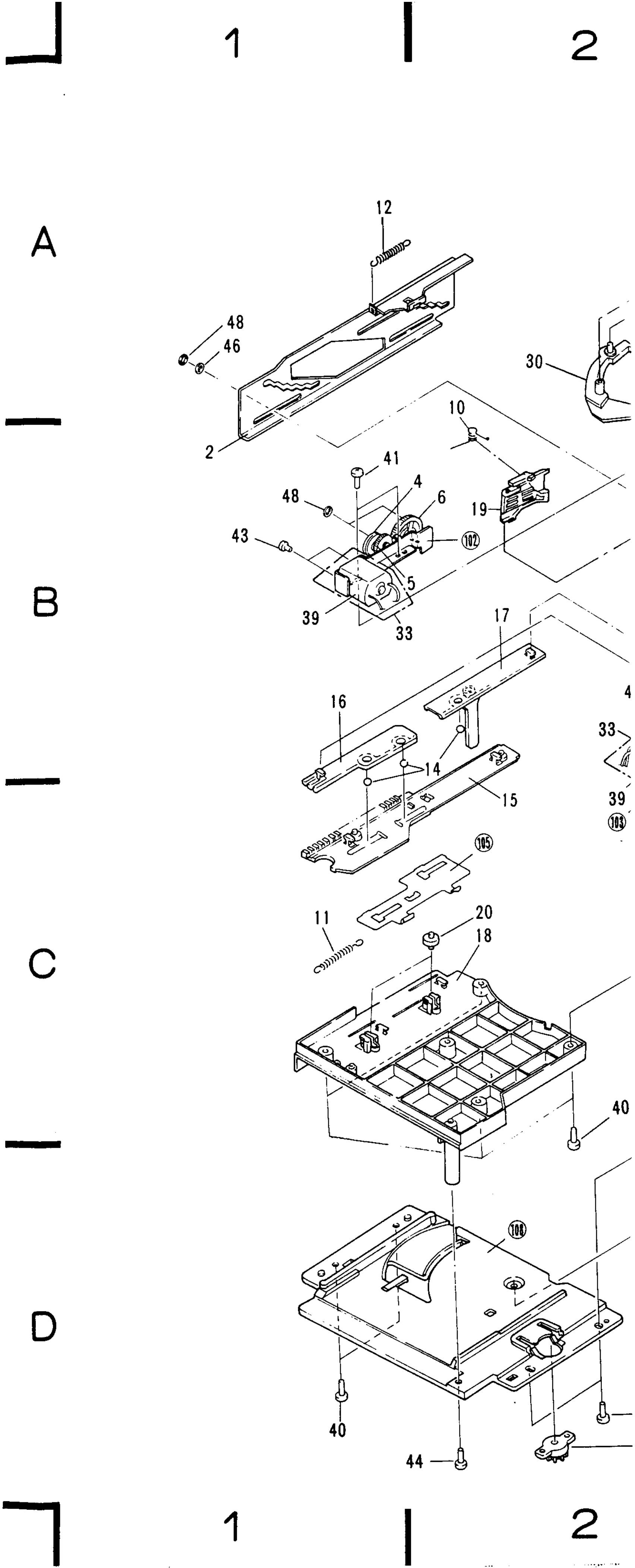
Description
Power switch board assembly
Transformer board assembly
Base
Rear panel
Angle
Switch angle
Front angle (A)
Angle (P)
Shield plate (M)
P.C.B angle
Cushion
Button sheet
Felt
Multi mechanism assembly
Door name plate
Door

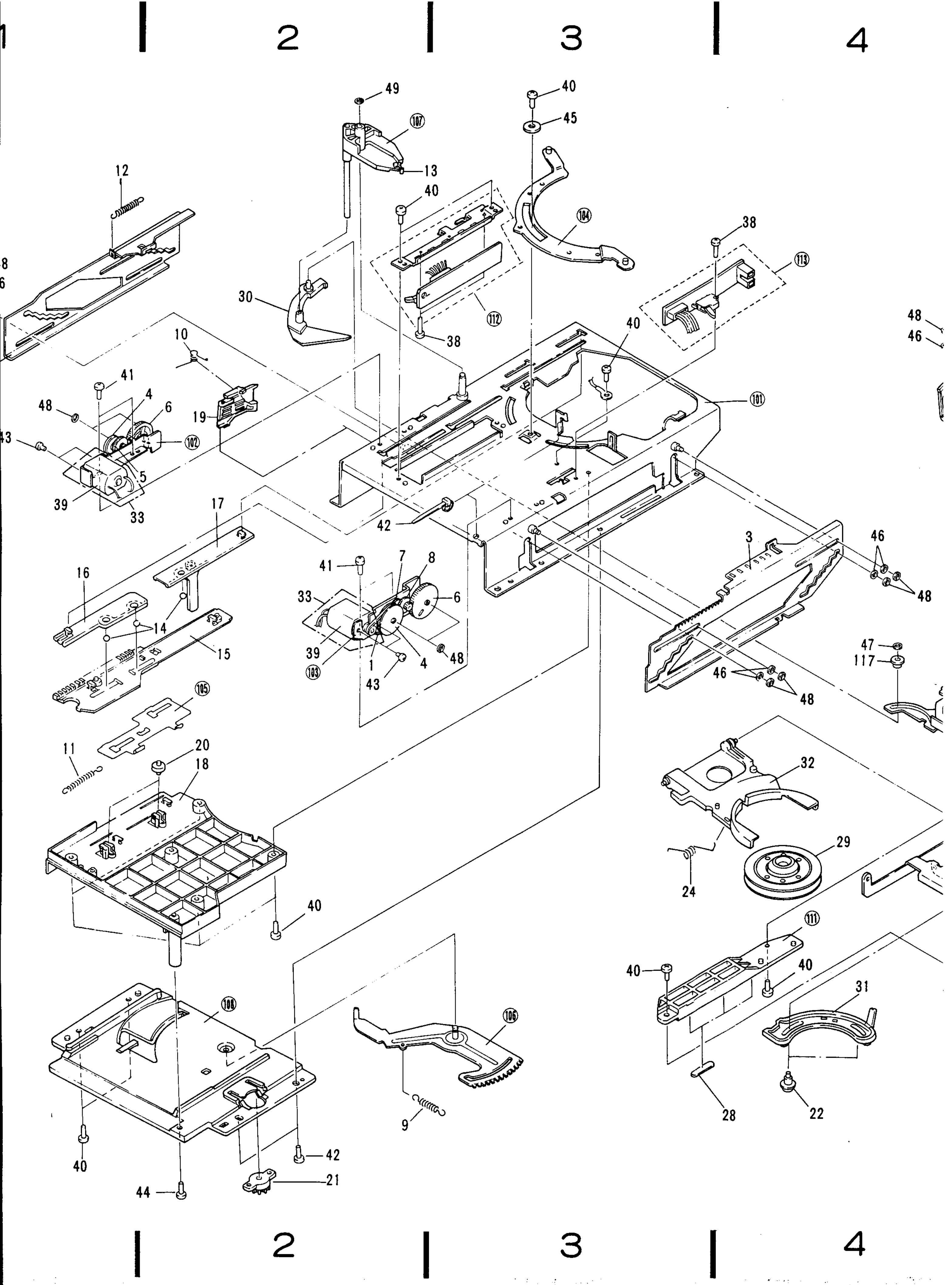
5.2 MECHANISM SECTION

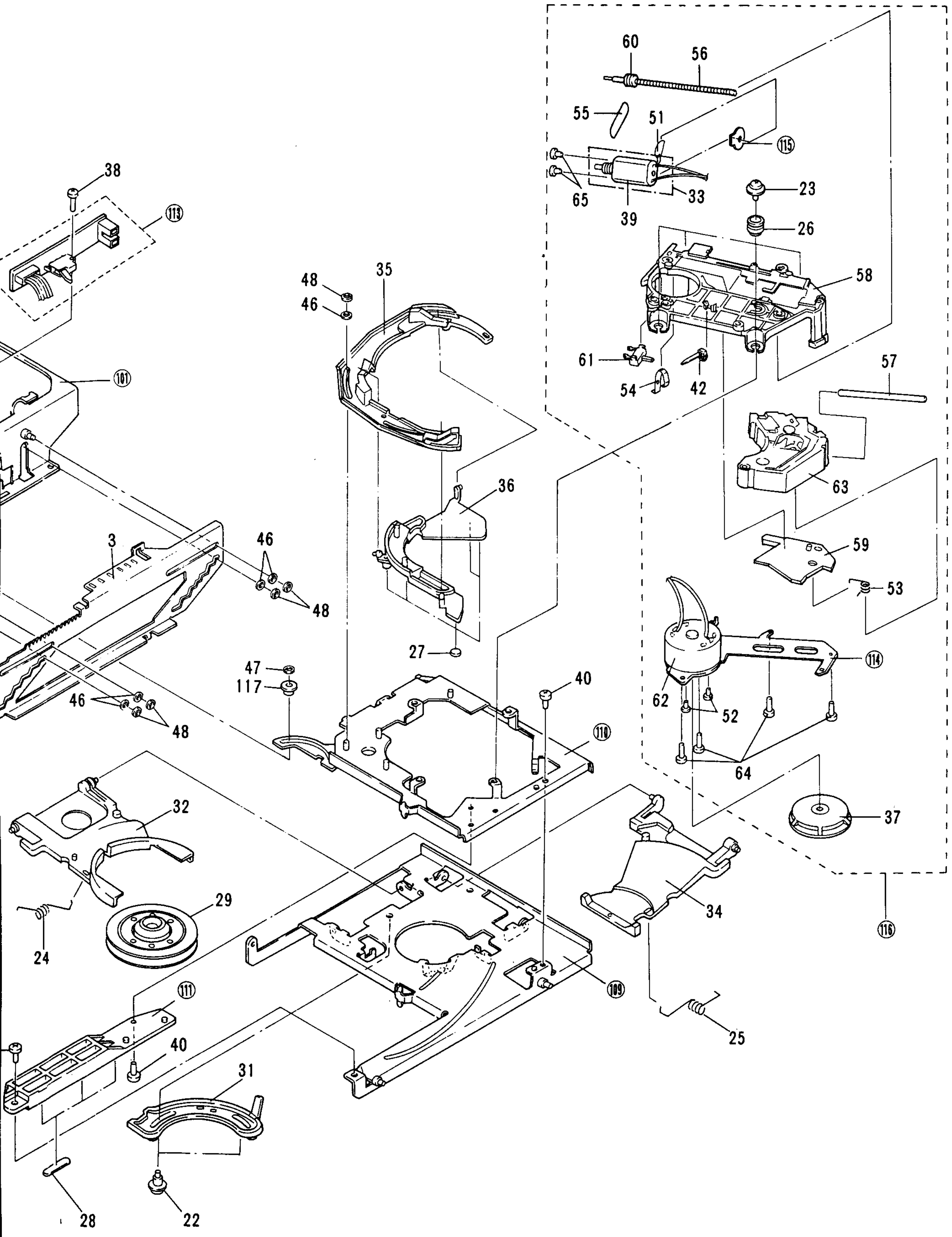
Parts List of Mechanism Section

Mark	No.	Part No.	Description
	1.	PEB1015	Belt
	2.	PNB1028	Stair (L)
	3.	PNB1138	Stair (R)
	4.	PNW1095	Gear pulley
	5.	PNW1096	Gear
	6.	PNW1097	Gear
	7.	PNW1122	Gear
	8.	PNW1098	Idler gear
	9.	PBH-465	Eject spring
	10.	PBH1014	Lock spring
	11.	PBH1015	SM spring
	12.	PBH1018	Stair spring
	13.	PBK1009	Drive spring
	14.	PBP-001	Steel ball $\phi 4$
	15.	PNW1099	Rack
	16.	PNW1253	Drive plate
	17.	PNW1101	Operation plate
	18.	PNW1102	Top guide
	19.	PNW1395	Lock lever
	20.	PNY-386	Roller
	21.	PXC-016	Damper assembly
	22.	PBA-125	Screw
	23.	PBA1002	Screw
	24.	PBH1016	Clamper spring (T)
	25.	PBH1017	Clamper spring (B)
	26.	PEB1014	Float rubber
	27.	PED1001	Cushion (A)
	28.	PED1002	Cushion (B)
	29.	PNW1448	Clamper
	30.	PNW1105	Rotary lever
	31.	PNW1106	Clamper cam
	32.	PNW1107	Clamper holder (T)
	33.	PYY1025	Motor assembly (CARRIAGE, LOADING, DISC SELECT)
	34.	PNW1108	Clamper holder (B)
	35.	PNW1110	Pressure cam
	36.	PNW1111	Upper tray
	37.	PYY1027	Disc table assembly
	38.	BBZ20P080FMC	Screw
	39.	PXM1002	Motor
	40.	BBZ30P060FMC	Screw
	41.	PCZ30P040FMC	Screw
	42.	PEC-107	Binder
	43.	PMZ20P030FMC	Screw
	44.	PPZ30P080FMC	Screw
	45.	WA30F120M100	Washer
	46.	WA31D054D050	Washer
	47.	WT12D032D025	Washer
	48.	WT25D047D025	Washer
	49.	WT31D054D025	Washer
	50.	....	....
	51.	CGDYX104M25	Ceramic capa
	52.	PBA-209	Screw
	53.	PBH1008	Drive spring
	54.	PBK1010	Spring
	55.	PEB1072	Belt
	56.	PLA1003	Drive screw
	57.	PLA1004	Guide bar
	58.	PNW1062	Chassis
	59.	PNW1063	Carriage plate
	60.	PNW1066	Pully
	61.	PSH1003	Slide switch (
	62.	PXM1001	Spindle moto
	63.	PWY1008	Pick up assem
	64.	BPZ20P080FZK	Screw
	65.	PMZ20P030FMC	Screw
	101.		Main chassis
	102.		Gear angle (L)
	103.		Gear angle (R)
	104.		Lever
	105.		SM select
	106.		Eject lever
	107.		Drive lever
	108.		Bottom guide
	109.		Sub chassis
	110.		Upper chassis
	111.		Upper guide
	112.		Switch board a
	113.		Select board as
	114.		Base plate
	115.		Carriage motor
	116.		Servo mechani
	117.	PLA1023	Roller

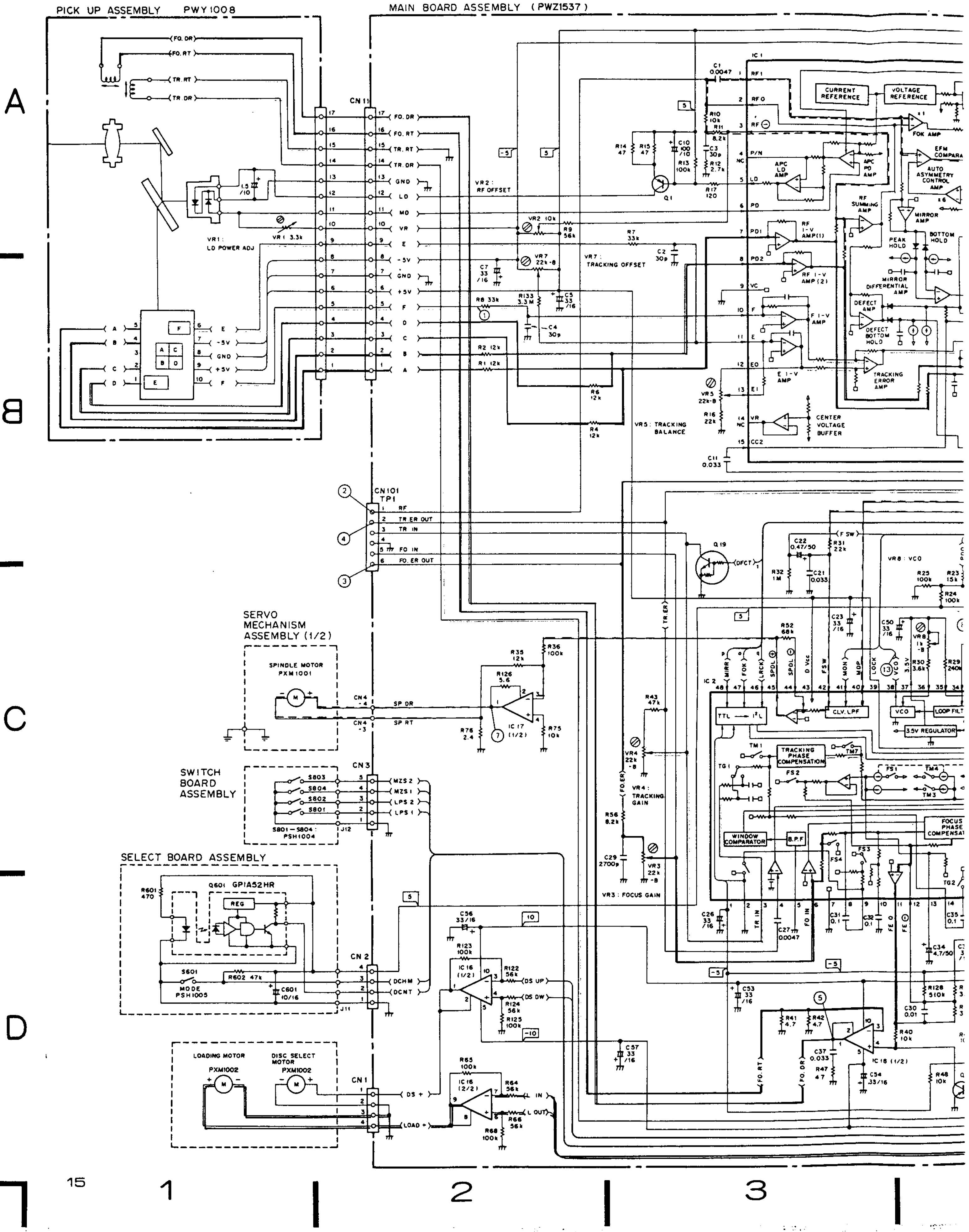
Mark	No.	Part No.	Description
	51.	CGDYX104M25	Ceramic capacitor
	52.	PBA-209	Screw
	53.	PBH1008	Drive spring
	54.	PBK1010	Spring
	55.	PEB1072	Belt
	56.	PLA1003	Drive screw
	57.	PLA1004	Guide bar
	58.	PNW1062	Chassis
	59.	PNW1063	Carriage plate
	60.	PNW1066	Pully
	61.	PSH1003	Slide switch (INSIDE)
	62.	PXM1001	Spindle motor
	63.	PWY1008	Pick up assembly
	64.	BPZ20P080FZK	Screw
	65.	PMZ20P030FMC	Screw
	101.		Main chassis
	102.		Gear angle (L)
	103.		Gear angle (R)
	104.		Lever
	105.		SM select
	106.		Eject lever
	107.		Drive lever
	108.		Bottom guide
	109.		Sub chassis
	110.		Upper chassis
	111.		Upper guide
	112.		Switch board assembly
	113.		Select board assembly
	114.		Base plate
	115.		Carriage motor board
	116.		Servo mechanism assembly
	117.	PLA1023	Roller


1
2
A
B
C
D
12
48
46
30
10
2
41
4
6
48
19
43
102
5
39
33
17
16
4
33
14
15
39
103
105
11
20
18
40
108
40
44
1
2


(107)
(104)
(113)
(112)
(102)
(101)
(103)
(105)
(111)
(108)
(106)

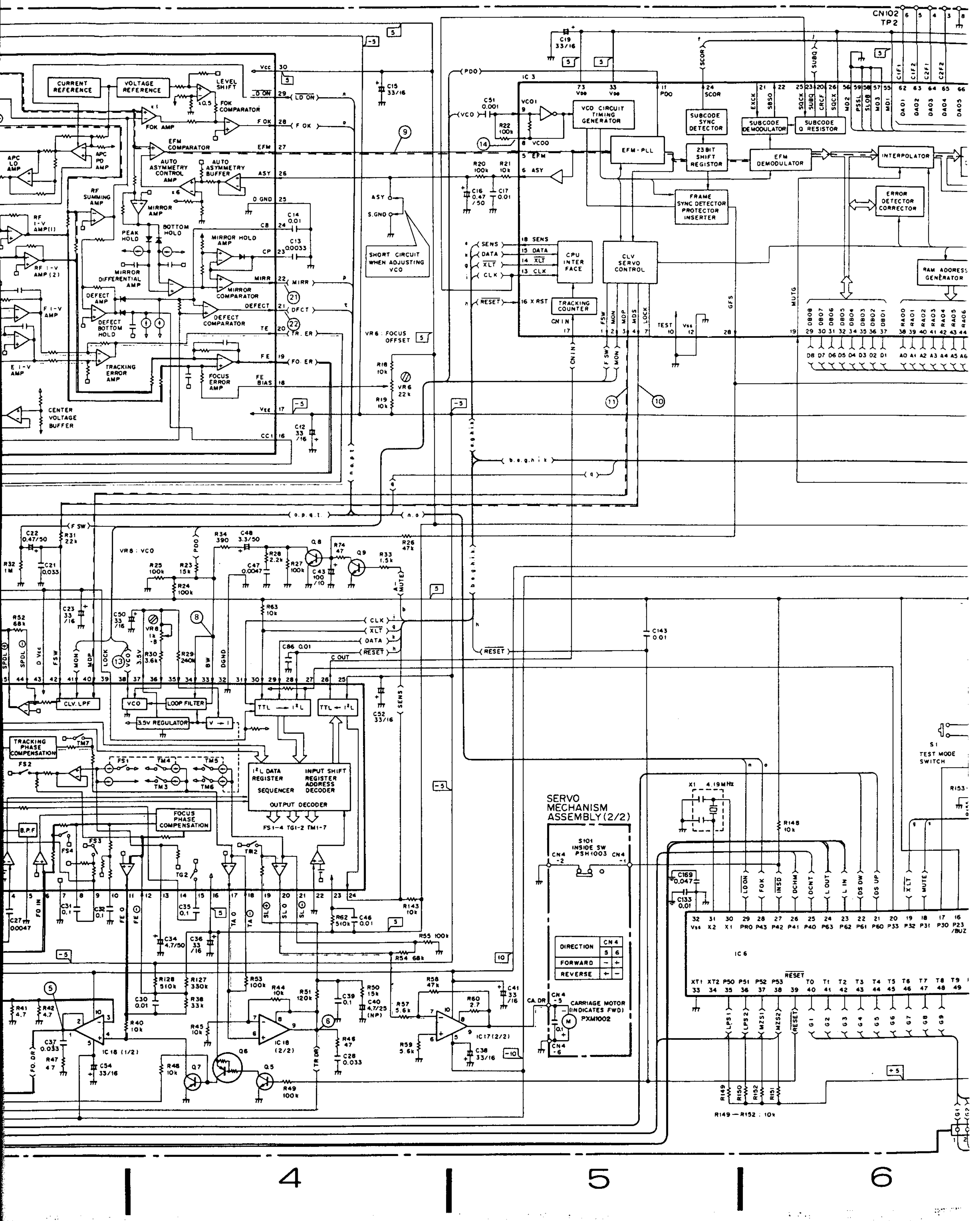

(115)
(113)
(101)
(114)
(110)
(116)
(111)
(109)
A
B
C
D

6. SCHEMATIC DIAGRAM


PICK UP ASSEMBLY PWY1008
MAIN BOARD ASSEMBLY (PWZ1537)
FO.DR
FO.RT
TR.RT
TR.DR
CN11
GND
LD
MD
VR
E
-5V
+5V
F
D
C
B
A
1.5/10
VR1 3.3k
VR1: LD POWER ADJ
VR2: RF OFFSET
VR2 10k
R9 56k
VR7 22k-B
VR7: TRACKING OFFSET
C7 33/16
R8 33k
R133 3.3M
C5 33/16
C4 30p
R2 12k
R1 12k
R6 12k
R4 12k
R7 33k
C2 30p
C1 0.0047
R10 10k
R11 8.2k
C3 30p
R12 2.7k
R14 47
R15 47
C10 100/10
R13 100k
R17 120
Q1
IC1
RF1
RFO
RF⊖
P/N
NC
LD
PD
PD1
PD2
VC
F
E
EO
E1
VR
CC2
CURRENT REFERENCE
VOLTAGE REFERENCE
FOK AMP
EFM COMPARA
APC LD AMP
APC PD AMP
AUTO ASYMMETRY CONTROL AMP
RF SUMMING AMP
MIRROR AMP
PEAK HOLD
BOTTOM HOLD
RF I-V AMP(1)
RF I-V AMP(2)
MIRROR DIFFERENTIAL AMP
DEFECT AMP
DEFECT BOTTOM HOLD
F I-V AMP
E I-V AMP
TRACKING ERROR AMP
CENTER VOLTAGE BUFFER
VR5 22k-B
VR5: TRACKING BALANCE
R16 22k
C11 0.033
CN101 TP1
RF
TR.ER OUT
TR IN
FO IN
FO.ER OUT
Q19
DFCT
C22 0.47/50
R31 22k
F SW
R32 1M
C21 0.033
VR8: VCO
R25 100k
R23 15k
R24 100k
C23 33/16
C50 33/16
VR8 1k-B
R30 3.6k
R29 240k
R52 68k
TR.ER
IC2
MIRR
FOK
LRCK
SPDL⊕
SPDL⊖
D Vcc
FSW
MON
MDP
LOCK
VCO
3.5V
TTL → I²L
CLV.LPF
VCO
LOOP FILT
3.5V REGULATOR
TRACKING PHASE COMPENSATION
TM1
TM7
TG1
FS2
FS1
TM4
TM3
WINDOW COMPARATOR
B.P.F
FS4
FS3
FOCUS PHASE COMPENSA
TG2
R43 47k
VR4 22k-B
VR4: TRACKING GAIN
FO.ER
R56 8.2k
C29 2700p
VR3 22k-B
VR3: FOCUS GAIN
C26 33/16
TR IN
FO IN
C27 0.0047
C31 0.1
C32 0.1
FE O
FE I
C35 0.1
C34 4.7/50
R128 510k
C30 0.01
C53 33/16
R41 4.7
R42 4.7
R40 10k
C37 0.033
R47 47
C54 33/16
IC18 (1/2)
R48 10k
C57 33/16
FO.RT
FO.DR
SERVO MECHANISM ASSEMBLY (1/2)
SPINDLE MOTOR PXM1001
M
CN4 -4
CN4 -3
SP DR
SP RT
R35 12k
R36 100k
R126 5.6
IC17 (1/2)
R76 2.4
R75 10k
SWITCH BOARD ASSEMBLY
CN3
S803
S804
S802
S801
S801 – S804: PSH1004
J12
MZS 2
MZS 1
LPS 2
LPS 1
SELECT BOARD ASSEMBLY
R601 470
Q601 GP1A52HR
REG
S601 MODE PSH1005
R602 47k
C601 10/16
J11
CN2
DCHM
DCNT
C56 33/16
R123 100k
IC16 (1/2)
R122 56k
DS UP
DS DW
R124 56k
R125 100k
LOADING MOTOR PXM1002
DISC SELECT MOTOR PXM1002
CN1
DS +
LOAD +
R65 100k
IC16 (2/2)
R64 56k
L IN
L OUT
R66 56k
R68 100k
5
-5
10
-10
A
B
C
D
1
2
3

NOTE:

1. RESISTORS:
   Indicated in Ω, 1/8W & 1/4W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance
2. CAPACITORS:
   Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.


CURRENT REFERENCE
VOLTAGE REFERENCE
LEVEL SHIFT
FOK COMPARATOR
FOK AMP
EFM COMPARATOR
APC LD AMP
APC PD AMP
AUTO ASYMMETRY CONTROL AMP
AUTO ASYMMETRY BUFFER
RF SUMMING AMP
MIRROR AMP
PEAK HOLD
BOTTOM HOLD
RF I-V AMP(1)
RF I-V AMP(2)
MIRROR HOLD AMP
MIRROR DIFFERENTIAL AMP
MIRROR COMPARATOR
DEFECT AMP
DEFECT BOTTOM HOLD
DEFECT COMPARATOR
F I-V AMP
E I-V AMP
TRACKING ERROR AMP
FOCUS ERROR AMP
CENTER VOLTAGE BUFFER
SHORT CIRCUIT WHEN ADJUSTING VCO
VR6 : FOCUS OFFSET
VR8 : VCO
IC 3
VCO CIRCUIT TIMING GENERATOR
EFM-PLL
23 BIT SHIFT REGISTOR
SUBCODE SYNC DETECTOR
SUBCODE DEMODULATOR
SUBCODE Q RESISTOR
EFM DEMODULATOR
FRAME SYNC DETECTOR PROTECTOR INSERTER
INTERPOLATOR
ERROR DETECTOR CORRECTOR
RAM ADDRESS GENERATOR
CPU INTER FACE
CLV SERVO CONTROL
TRACKING COUNTER
CN102 TP2
CLV. LPF
VCO
LOOP FILTER
3.5V REGULATOR
TRACKING PHASE COMPENSATION
FOCUS PHASE COMPENSATION
B.P.F
I²L DATA REGISTER
INPUT SHIFT REGISTER ADDRESS DECODER
SEQUENCER
OUTPUT DECODER
FS1-4 TG1-2 TM1-7
SERVO MECHANISM ASSEMBLY (2/2)
S101 INSIDE SW PSH1003
DIRECTION CN4 5 6
FORWARD − +
REVERSE + −
CARRIAGE MOTOR (INDICATES FWD) PXM1002
X1 4.19MHz
IC 6
S1 TEST MODE SWITCH
IC18 (1/2)
IC18 (2/2)
IC17 (2/2)
R149 — R152 : 10k
4
5
6

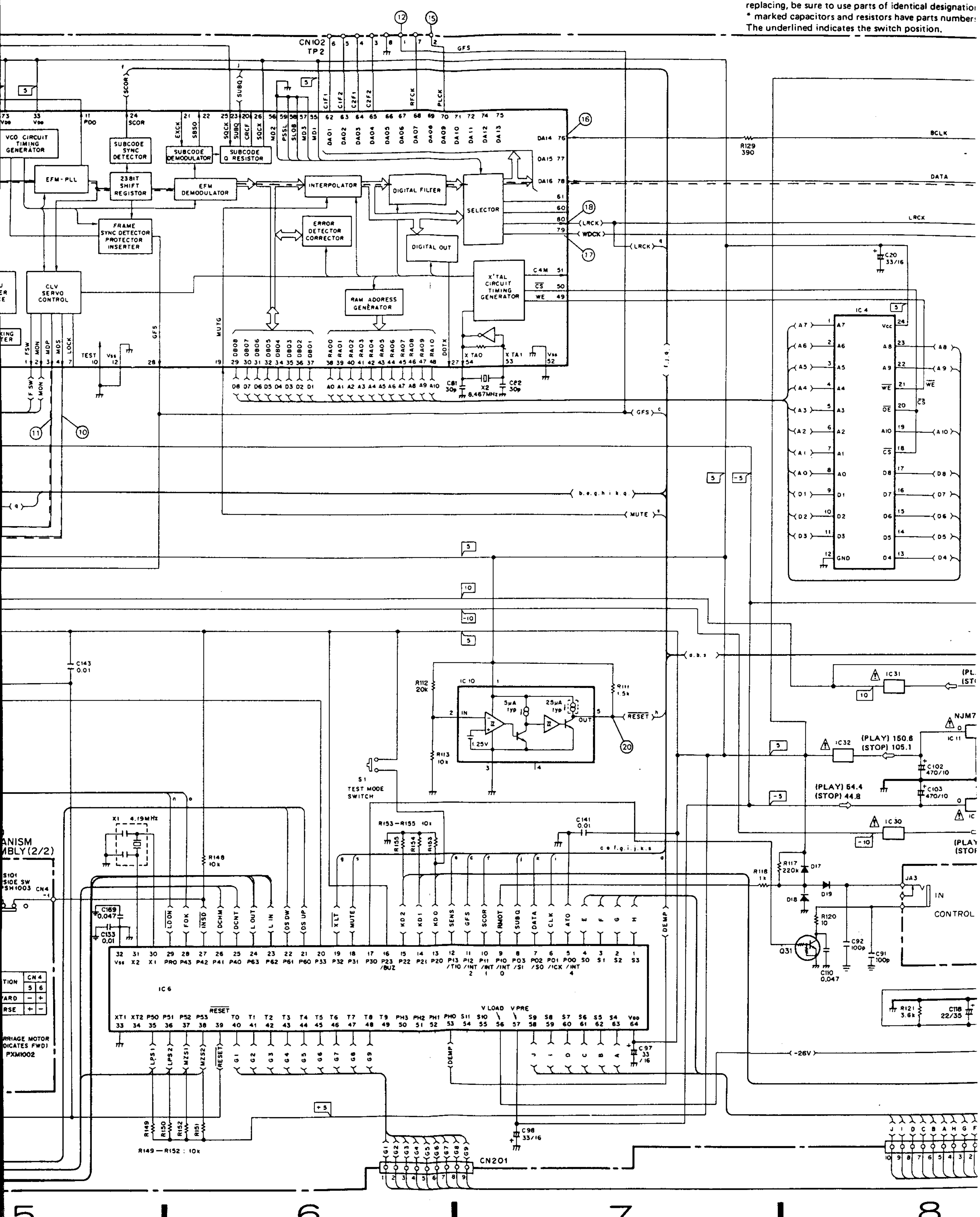
s otherwise
±10%, (M);

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:
▭; DC voltage (V) at PLAY state
Value in ( ) is DC voltage at rated power.
mA; DC current at no input signal

4. OTHERS:
➡ ; Signal route.
⊘ ; Adjusting point.

The ⚠ mark found on some component parts i
importance of the safety factor of the part. Ther
replacing, be sure to use parts of identical designatio
* marked capacitors and resistors have parts number
The underlined indicates the switch position.



CN102 TP2
GFS
SCOR
SUBQ
VCO CIRCUIT TIMING GENERATOR
EFM-PLL
SUBCODE SYNC DETECTOR
23BIT SHIFT REGISTOR
SUBCODE DEMODULATOR
SUBCODE Q RESISTOR
EFM DEMODULATOR
FRAME SYNC DETECTOR PROTECTOR INSERTER
INTERPOLATOR
ERROR DETECTOR CORRECTOR
DIGITAL FILTER
DIGITAL OUT
SELECTOR
RAM ADDRESS GENERATOR
X'TAL CIRCUIT TIMING GENERATOR
CLV SERVO CONTROL
DA14 76
DA15 77
DA16 78
C4M 51
CS 50
WE 49
X TAO 54
X TA1 53
C81 30p
X2 8.467MHz
C82 30p
R129 390
BCLK
DATA
LRCK
WDCK
C20 33/16
IC4
A7 A6 A5 A4 A3 A2 A1 A0 D1 D2 D3 GND
Vcc A8 A9 WE OE A10 CS D8 D7 D6 D5 D4
MUTE
GFS
RESET
IC10
R112 20k
R113 10k
R111 1.5k
5μA typ
25μA typ
1.25V
S1 TEST MODE SWITCH
R153—R155 10k
C141 0.01
C143 0.01
X1 4.19MHz
C169 0.047
C133 0.01
R148 10k
ANISM
MBLY(2/2)
S101
SIDE SW
SM1003
CN4
IC6
LDON FOK INSD DCHM DCNT L OUT L IN DS DW DS UP XLT MUTE KD2 KD1 KD0 SENS GFS SCOR RMOT SUBQ DATA CLK ATO E F G H DEMP
LPS1 LPS2 MZS1 MZS2 RESET G1 G2 G3 G4 G5 G6 G7 G8 G9 DEMP J I D C B A
C97 33/16
C98 33/16
R149—R152 : 10k
CN201
-26V
RIAGE MOTOR
DICATES FWD)
PXM1002
IC31
IC32
(PLAY) 150.6
(STOP) 105.1
(PLAY) 54.4
(STOP) 44.8
IC30
NJM7
C102 470/10
C103 470/10
R118 1k
R117 220k
D17
D18
D19
R120 10
Q31
C110 0.047
C92 100p
C91 100p
JA3
IN
CONTROL
R121 3.6k
C118 22/35
5
6
7
8

4. OTHERS:

➡ ; Signal route.

⊘ ; Adjusting point.

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

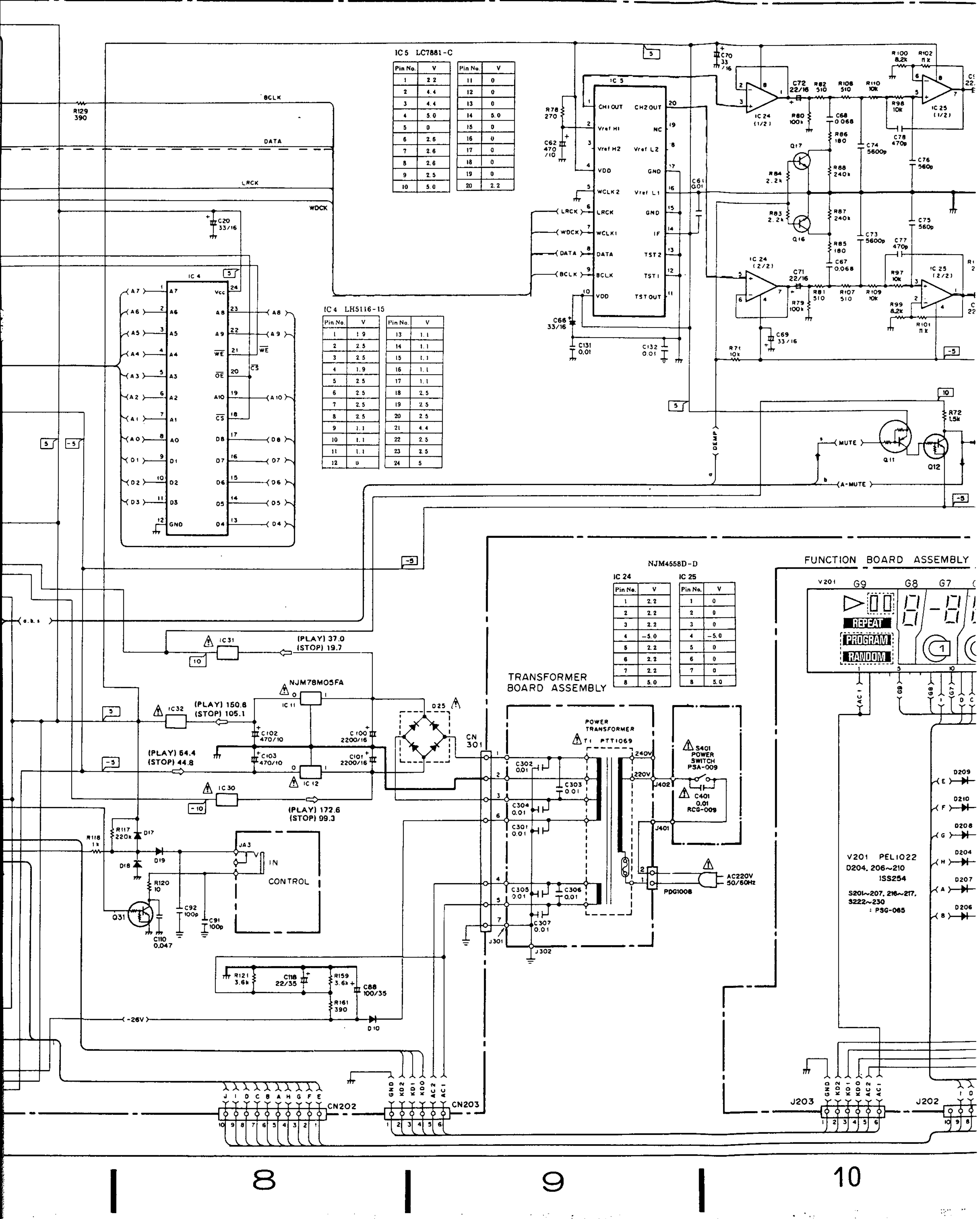
* marked capacitors and resistors have parts numbers.

The underlined indicates the switch position.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

MAIN BOARD ASSEMBLY

IC1	CXA1081S
IC2	CXA1082BS
IC3	CXD1130QZ
IC4	LH5116-15
IC5	LC7881-C
IC6	PD4150A(μPD76212)
IC10	M51965AL
IC11	NJM78M05FA
IC12	NJM79M05FA
IC18 – IC18	TA8410K
IC24, 26	NJM4558D-D
IC30 – 32	ICP N10
Q1	2SA1399
Q5, 8, 9, 16, 17	2SC1740S
Q8, 11	DTA124ES
Q7	2SA9335
Q12, 19, 31	DTC124ES



IC 5 LC7881-C

Pin No.	V	Pin No.	V
1	2.2	11	0
2	4.4	12	0
3	4.4	13	0
4	5.0	14	5.0
5	0	15	0
6	2.6	16	0
7	2.6	17	0
8	2.6	18	0
9	2.5	19	0
10	5.0	20	2.2

IC 4 LH5116-15

Pin No.	V	Pin No.	V
1	1.9	13	1.1
2	2.5	14	1.1
3	2.5	15	1.1
4	1.9	16	1.1
5	2.5	17	1.1
6	2.5	18	2.5
7	2.5	19	2.5
8	2.5	20	2.5
9	1.1	21	4.4
10	1.1	22	2.5
11	1.1	23	2.5
12	0	24	5

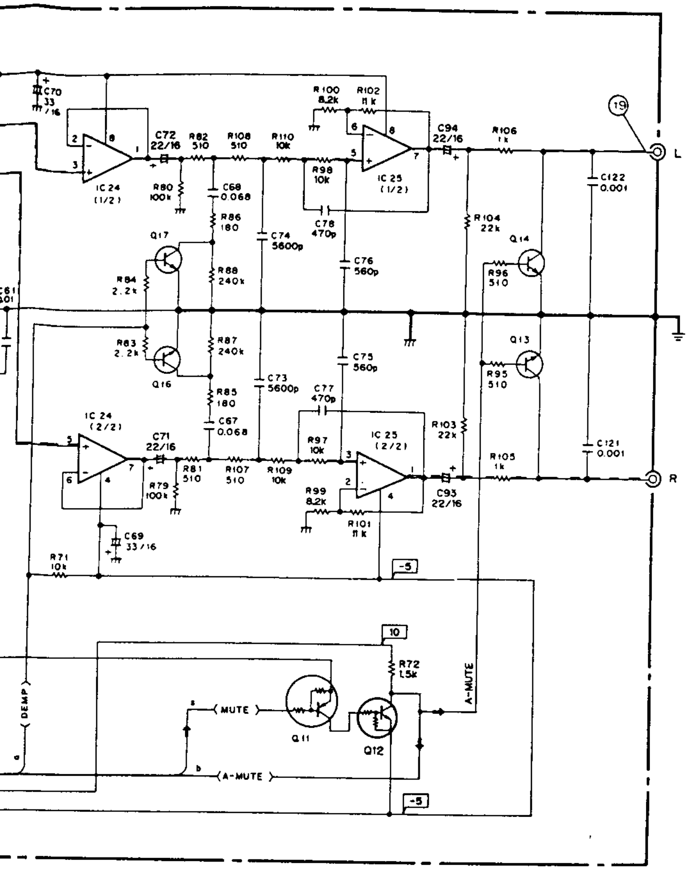
NJM4558D-D

IC 24 Pin No.	IC 24 V	IC 25 Pin No.	IC 25 V
1	2.2	1	0
2	2.2	2	0
3	2.2	3	0
4	−5.0	4	−5.0
5	2.2	5	0
6	2.2	6	0
7	2.2	7	0
8	5.0	8	5.0

IC 5
CH1OUT
CH2OUT
Vref H1
Vref H2
Vref L2
Vref L1
VDD
GND
WCLK2
LRCK
WDCK
WCLK1
DATA
BCLK
IF
TST2
TST1
TST OUT
NC
BCLK
DATA
LRCK
WDCK
R129 390
C20 33/16
R78 270
C62 470/10
C66 33/16
C131 0.01
C132 0.01
C61 0.01
C70 33/16
IC 24 (1/2)
IC 24 (2/2)
IC 25 (1/2)
IC 25 (2/2)
C72 22/16
C71 22/16
R82 510
R81 510
R108 510
R107 510
R110 10k
R109 10k
R80 100k
R79 100k
C68 0.068
C67 0.068
R86 180
R85 180
R88 240k
R87 240k
R84 2.2k
R83 2.2k
Q17
Q16
C74 5600p
C73 5600p
C78 470p
C77 470p
C76 560p
C75 560p
R98 10k
R97 10k
R100 8.2k
R99 8.2k
R102 n k
R101 n k
C69 33/16
R71 10k
R72 1.5k
MUTE
A-MUTE
DEMP
Q11
Q12
IC 4
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
D1
D2
D3
D4
D5
D6
D7
D8
Vcc
WE
OE
CS
GND
a.b.s
IC31
(PLAY) 37.0
(STOP) 19.7
NJM78M05FA
IC 11
IC 12
IC32
(PLAY) 150.8
(STOP) 105.1
(PLAY) 54.4
(STOP) 44.8
IC30
(PLAY) 172.6
(STOP) 99.3
C102 470/10
C103 470/10
C100 2200/16
C101 2200/16
D25
CN 301
R117 220k
R118 1k
R120 10
D17
D18
D19
Q31
C92 100p
C91 100p
C110 0.047
JA3
IN
CONTROL
R121 3.6k
C118 22/35
R159 3.6k
R161 390
C88 100/35
D10
-26V
TRANSFORMER BOARD ASSEMBLY
POWER TRANSFORMER
T1 PTT1069
240V
220V
C302 0.01
C303 0.01
C304 0.01
C301 0.01
C305 0.01
C306 0.01
C307 0.01
S401 POWER SWITCH PSA-009
C401 0.01 RCG-009
J402
J401
J301
J302
PDG1008
AC220V 50/60Hz
FUNCTION BOARD ASSEMBLY
V201
G9
G8
G7
REPEAT
PROGRAM
RANDOM
AC1
V201 PEL1022
D204, 206~210 1SS254
S201~207, 216~217, S222~230 : PSG-065
D209
D210
D208
D204
D207
D206
J I D C B A H G F E
CN202
GND KD2 KD1 KD0 AC2 AC1
CN203
J203
J202
8
9
10

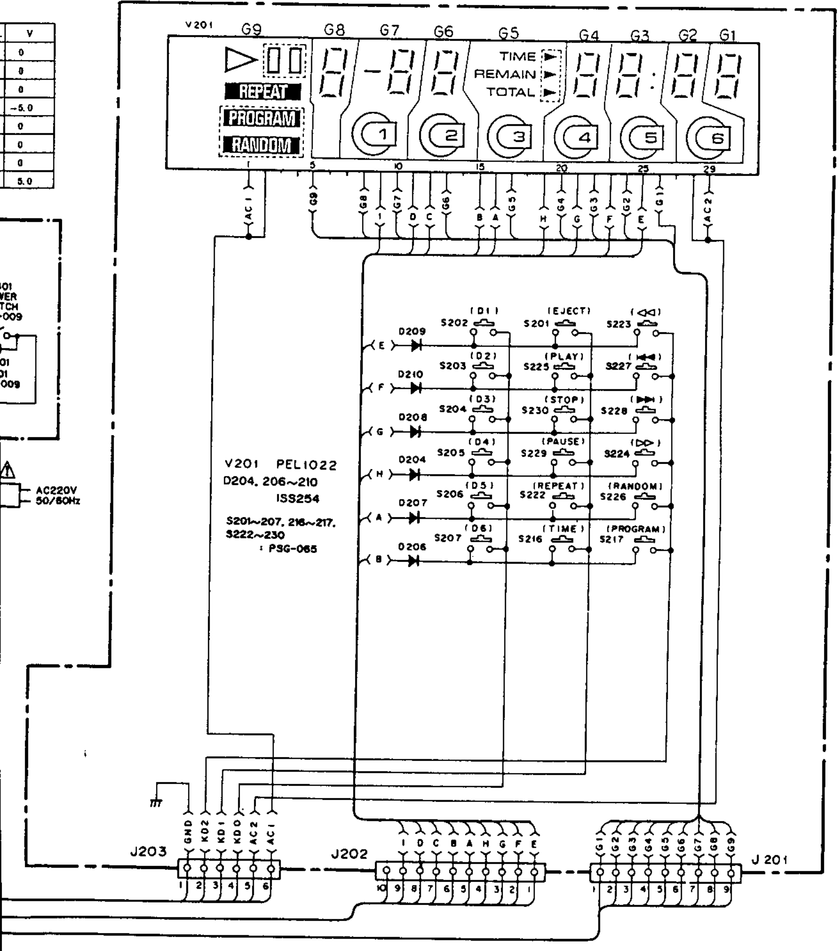
MAIN BOARD ASSEMBLY

IC1	CXA1081S
IC2	CXA1082BS
IC3	CXD1130QZ
IC4	LH5116-15
IC5	LC7881-C
IC6	PD4150A (μPD75212)
IC10	M51955AL
IC11	NJM78M05FA
IC12	NJM79M05FA
IC16 – IC18	TA8410K
IC24, 26	NJM4558D-D
IC30 – 32	ICP-N10
Q1	2SA1399
Q5, 8, 9, 16, 17	2SC1740S
Q6, 11	DTA124ES
Q7	2SA933S
Q12, 19, 31	DTC124ES
Q13, 14	2SD1302
D10	16R139-100
D17 – 19	1SS254
D25	WL02ML-5004
S1	PSG-064
VR2	VRTB6VS103
VR3 – VR7	VRTB6VS223
VR8	VRTS6VS102
X1	VSS1014
X2	PSS-012


C70
33/16
IC24 (1/2)
C72 22/16
R82 510
R108 510
R110 10k
R100 8.2k
R102 11k
R98 10k
IC25 (1/2)
C94 22/16
R106 1k
⑲
L
C68 0.068
R80 100k
R86 180
C74 5600p
C78 470p
R104 22k
C122 0.001
Q17
C76 560p
Q14
R84 2.2k
R88 240k
R96 510
AUDIO OUT
R83 2.2k
R87 240k
Q13
Q16
C75 560p
R95 510
R85 180
C73 5600p
C77 470p
IC24 (2/2)
C71 22/16
C67 0.068
R97 10k
IC25 (2/2)
R103 22k
C121 0.001
R81 510
R107 510
R109 10k
R105 1k
R
R79 100k
R99 8.2k
R101 11k
C93 22/16
C69 33/16
R71 10k
-5
10
R72 1.5k
A-MUTE
DEMP
MUTE
Q11
Q12
A-MUTE
-5

V
0
0
0
-5.0
0
0
0
5.0

FUNCTION BOARD ASSEMBLY (PWZ1542)


V201
G9
G8
G7
G6
G5
G4
G3
G2
G1
REPEAT
PROGRAM
RANDOM
TIME
REMAIN
TOTAL
1
2
3
4
5
6
AC1
G9
G8
I
G7
D
C
G6
B
A
G5
H
G4
G
F
G2
E
G1
AC2
D209
(D1) S202
(EJECT) S201
S223
E
D210
(D2) S203
(PLAY) S225
S227
F
D208
(D3) S204
(STOP) S230
S228
G
D204
(D4) S205
(PAUSE) S229
S224
H
D207
(D5) S206
(REPEAT) S222
(RANDOM) S226
A
D206
(D6) S207
(TIME) S216
(PROGRAM) S217
B
V201 PEL1022
D204, 206~210 1SS254
S201~207, 216~217, S222~230 : PSG-065
S101 POWER SWITCH
AC220V 50/60Hz
GND
KD2
KD1
KD0
AC2
AC1
J203
I D C B A H G F E
J202
G1 G2 G3 G4 G5 G6 G7 G8 G9
J201

DC voltage of Semiconductors (at PLAY state)

IC1 CXA1081S

Pin No.	V	Pin No.	V
1	0	16	−3
2	1.3	17	−5
3	0	18	0
4	2.4	19	0
5	2.8	20	0
6	−4.8	21	−4.9
7	0	22	0
8	0	23	−1
9	0	24	−2.1
10	0	25	0
11	0	26	2.5
12	−1.2	27	2.4
13	−0.1	28	5
14	0	29	0
15	−3.1	30	5

IC2 CXA1082BS

Pin No.	V	Pin No.	V
1	−5	25	−5
2	0	26	0
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	2.5
10	0	34	2.5
11	0.2	35	2.3
12	0	36	2.3
13	0.2	37	3.5
14	0	38	2.4
15	0	39	5
16	5	40	2.5
17	0	41	5
18	0	42	2.5
19	0	43	5
20	0	44	0
21	0	45	0.45
22	0	46	2.5
23	−4.1	47	5
24	5	48	0

IC3 CXD1130QZ

Pin No	V	Pin No.	V	Pin No.	V	Pin No.	V
1	2.5	26	5	51	2.3	76	2.3
2	5	27	2.5	52	0	77	2.3
3	2.5	28	5	53	2.2	78	1.2
4	2.8	29	1.1	54	2.2	79	2.5
5	2.4	30	1.1	55	5	80	2.5
6	2.5	31	1.1	56	0		
7	5	32	1.1	57	0		
8	2.4	33	5	58	0		
9	2.4	34	1.1	59	0		
10	0	35	1.1	60	1.3		
11	1.8	36	1.1	61	1.3		
12	0	37	1.1	62	0		
13	5	38	2.5	63	0		
14	5	39	2.5	64	0		
15	5	40	2.5	65	0		
16	5	41	2.5	66	0		
17	0	42	1.9	67	0		
18	5	43	2.5	68	2.5		
19	0	44	2.5	69	2.5		
20	5	45	1.9	70	2.3		
21	0	46	2.5	71	5		
22	0	47	2.5	72	0		
23	2.0	48	2.5	73	5		
24	0	49	4.2	74	0		
25	5	50	2.5	75	2.4		

IC6 PD4150A

Pin No.	V	Pin No.	V	Pin No.	V
1	−13.4	26	5.0	51	0
2	−17.8	27	5.0	52	5.0
3	−11.95	28	5.0	53	−5.0
4	−12.55	29	0	54	−19.7
5	0	30	2.3	55	−7.4
6	5.0	31	2.5	56	−26.1
7	5.0	32	0	57	−5.0
8	2.0	33	0	58	−22.8
9	5.0	34	5.0	59	−7.8
10	0	35	0	60	−12.7
11	5.0	36	0	61	−4.2
12	5.0	37	0	62	−5.75
13	0	38	5.0	63	−9.6
14	0	39	5.0	64	5.0
15	0	40	−23.3		
16	0	41	−23.3		
17	5.0	42	−23.3		
18	0	43	−23.3		
19	5.0	44	−23.3		
20	5.0	45	−23.3		
21	0	46	−23.3		
22	0	47	−23.0		
23	0	48	−22.9		
24	0		−25.3		
25	5.0	50	5.0		

IC16 TA8410K

Pin No	V
1	0
2	0
3	0
4	0
5	−9.6
6	0
7	0
8	0
9	0
10	9.8

IC17 TA8410K

Pin No.	V
1	−1.05
2	−1.15
3	0
4	0
5	−9.6
6	0
7	0
8	−0.8
9	−0.6
10	9.8

IC18 TA8410K

Pin No.	V
1	−1.1
2	−1.1
3	−0.2
4	−0.2
5	−9.6
6	0
7	0
8	0
9	0
10	9.8

IC10 M51955AL

Pin No.	V
1	5.0
2	1.7
3	0
4	0
5	5.0

IC11 NJM78M05FA

Pin No.	V
(IN) 1	9.8
(GND) 2	0
(OUY) 3	5.0

IC12 NJM79M05FA

Pin No.	V
(GND) 1	0
(IN) 2	−9.6
(OUT) 3	−5.0

Transistors

Q No.	V		
	E	C	B
Q 1	3.9	2.0	3.2
Q 5	0	0	0.7
Q 6	5.0	5.0	0
Q 7	0	−0.2	5.0
Q 8	0	0	0.7
Q 9	0	0.7	−5.0
Q 11	5.0	5.0	0
Q 12	−5.0	−5.0	5.0
Q 13	0	0	−5.0
Q 14	0	0	−5.0
Q 16	0	0	−5.0
Q 17	0	0	−5.0
Q 19	0	0	−4.9
Q 31	0	0	5.0

Diodes

D No.	V	
	Anode	Cathode
D 10	−25.6	1.0
D 17	5.0	5.0
D 18	0	5.0
D 19	5.0	4.8
D 25	1) −9.8	2) 0
	3) −9.7	4) 0
D 204	−13.5	3.4
D 206	−5.65	4.3
D 207	−8.0	4.0
D 208	−24.2	3.0
D 209	−12.65	3.3
D 210	−11.8	3.7

Anode ⊣← Cathode

FOCUS SERVO LOOP

SIGNAL LINE

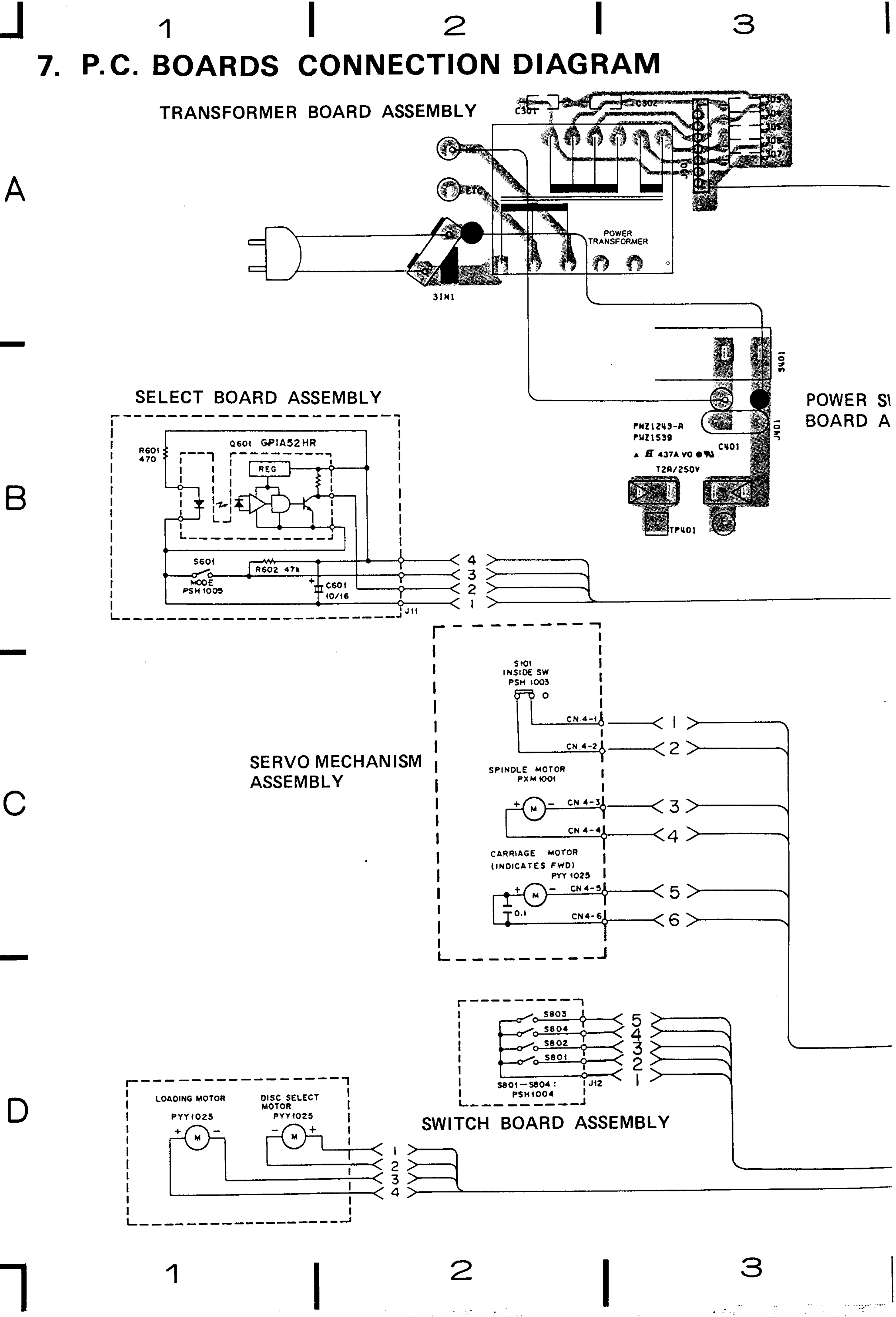
TRACKING SERVO LOOP

CARRIAGE SERVO LOOP

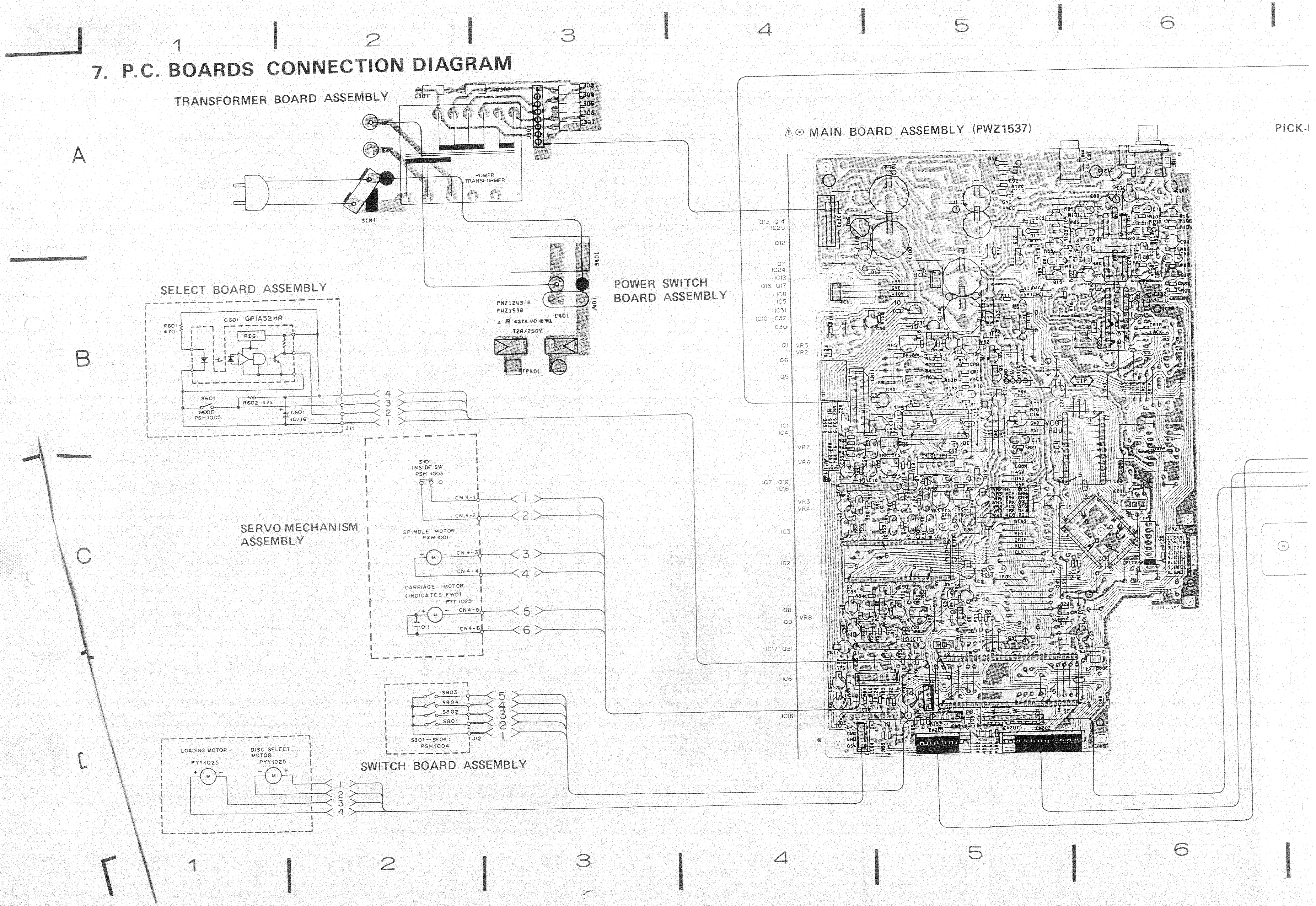
LOADING MOTOR

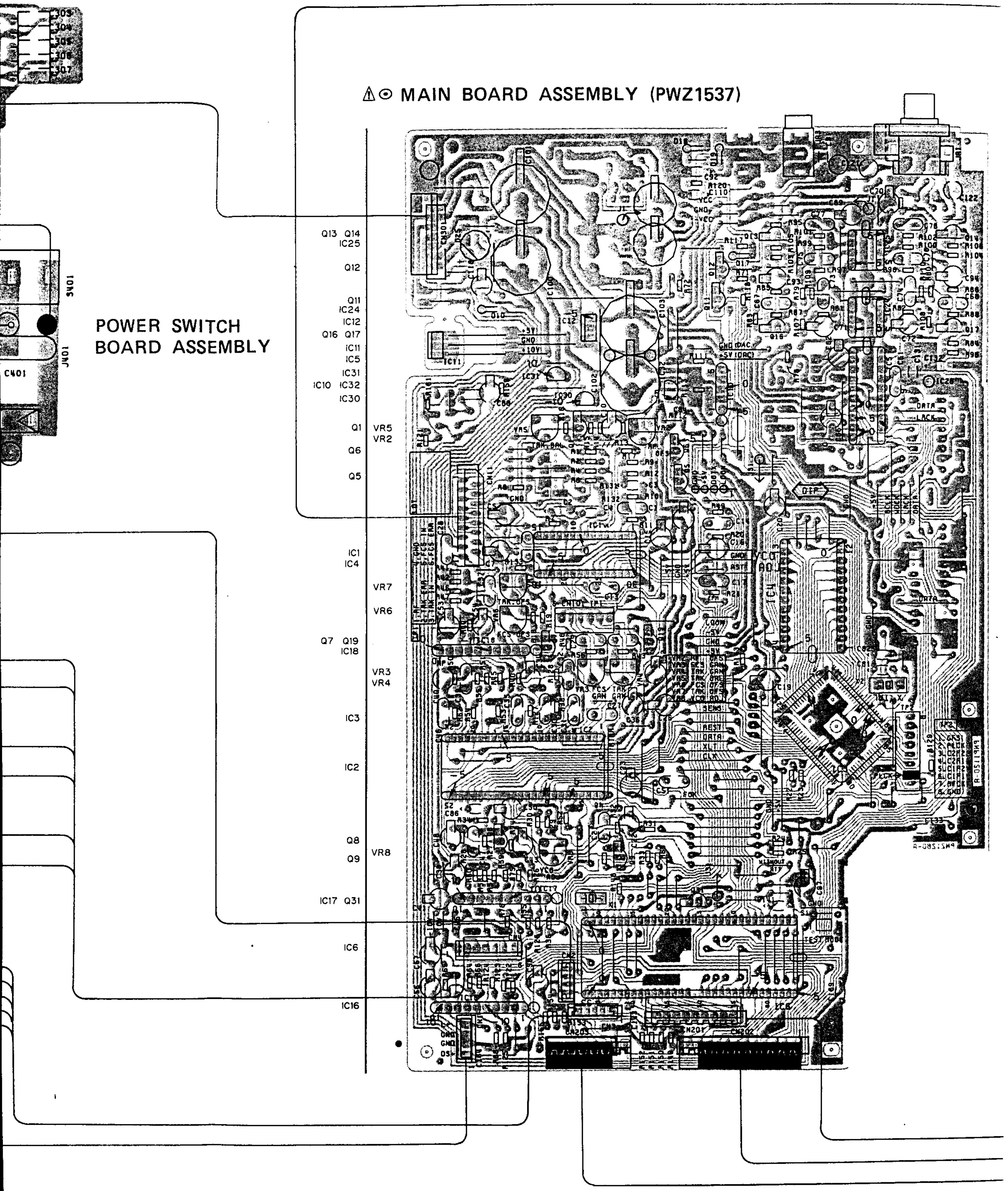
SPINDLE SERVO LOOP

7. P.C. BOARDS CONNECTION DIAGRAM

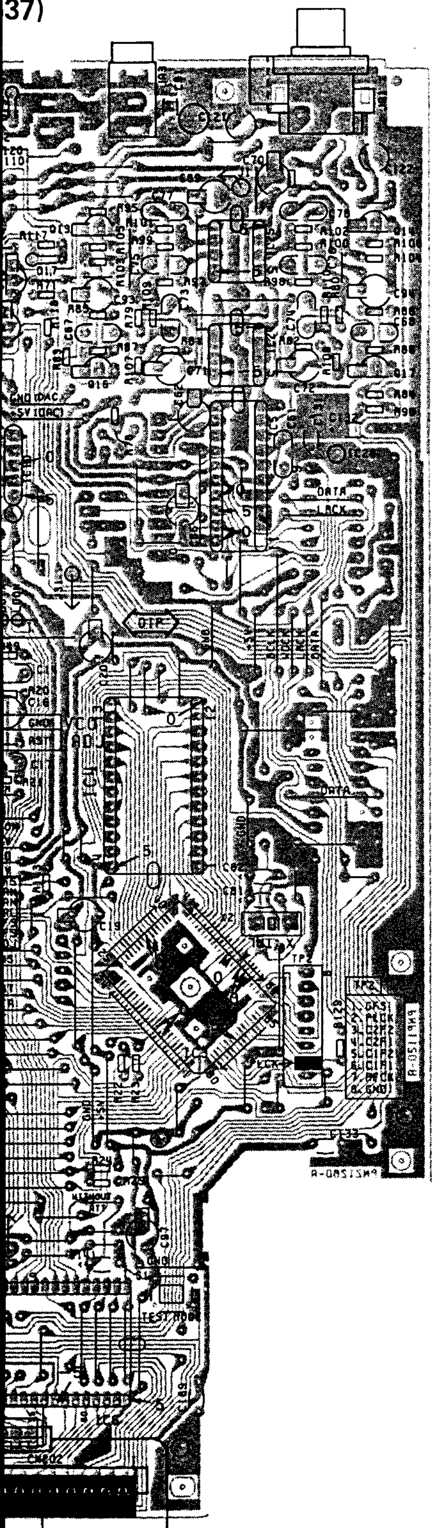

1
2
3
A
B
C
D
TRANSFORMER BOARD ASSEMBLY
C301
C302
305
304
305
306
307
J301
ETC
POWER TRANSFORMER
3IN1
S401
J401
POWER S
BOARD A
PNZ1243-A
PNZ1539
▲ 437A VO
C401
T2A/250V
TP401
SELECT BOARD ASSEMBLY
R601 470
Q601 GP1A52HR
REG
S601 MODE PSH1005
R602 47k
C601 10/16
J11
4
3
2
1
S101 INSIDE SW PSH 1003
CN 4-1
CN 4-2
SPINDLE MOTOR PXM 1001
CN 4-3
CN 4-4
CARRIAGE MOTOR (INDICATES FWD) PYY 1025
CN 4-5
CN 4-6
0.1
M
1
2
3
4
5
6
SERVO MECHANISM ASSEMBLY
S803
S804
S802
S801
S801—S804 : PSH1004
J12
5
4
3
2
1
SWITCH BOARD ASSEMBLY
LOADING MOTOR PYY1025
DISC SELECT MOTOR PYY1025
1
2
3
4

7. P.C. BOARDS CONNECTION DIAGRAM

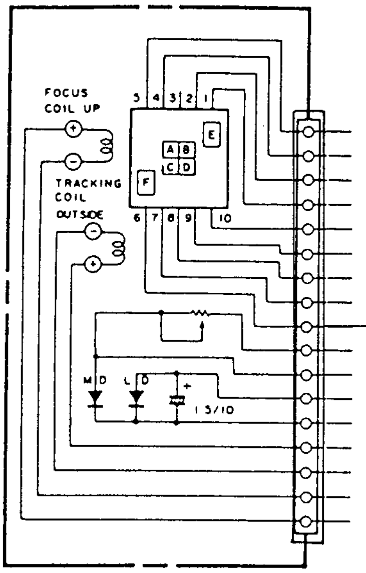

1
2
3
4
5
6
A
B
C
TRANSFORMER BOARD ASSEMBLY
C301
C302
C303
C304
C305
C306
C307
J301
ETC
POWER TRANSFORMER
31N1
9401
J401
POWER SWITCH BOARD ASSEMBLY
PWZ1243-A
PWZ1539
C401
437A VO
T2A/250V
TP401
SELECT BOARD ASSEMBLY
Q601 GP1A52HR
R601 470
REG
S601
MODE
PSH1005
R602 47k
C601 10/16
J11
4
3
2
1
S101
INSIDE SW
PSH 1003
CN 4-1
CN 4-2
CN 4-3
CN 4-4
CN 4-5
CN 4-6
SPINDLE MOTOR
PXM 1001
CARRIAGE MOTOR
(INDICATES FWD)
PYY 1025
0.1
1
2
3
4
5
6
SERVO MECHANISM ASSEMBLY
S803
S804
S802
S801
S801—S804 :
PSH1004
J12
5
4
3
2
1
SWITCH BOARD ASSEMBLY
LOADING MOTOR
PYY1025
DISC SELECT MOTOR
PYY1025
1
2
3
4
MAIN BOARD ASSEMBLY (PWZ1537)
PICK-
Q13 Q14
IC25
Q12
Q11
IC24
IC12
Q16 Q17
IC11
IC5
IC31
IC10 IC32
IC30
Q1
Q6
Q5
VR5
VR2
IC1
IC4
VR7
VR6
Q7 Q19
IC18
VR3
VR4
IC3
IC2
Q8
Q9
VR8
IC17 Q31
IC6
IC16
CN301
IC101
IC102
IC103
IC4
VCO ADJ
DIP
+5V
GND
+10V
-10V
GND
-5V
DATA
LACK
TEST MODE
CN201
CN202
CN203


MAIN BOARD ASSEMBLY (PWZ1537)
POWER SWITCH BOARD ASSEMBLY
S401
J401
CN401
Q13 Q14
IC25
Q12
Q11
IC24
IC12
Q16 Q17
IC11
IC5
IC31
IC10 IC32
IC30
Q1
Q6
Q5
VR5
VR2
IC1
IC4
VR7
VR6
Q7 Q19
IC18
VR3
VR4
IC3
IC2
Q8
Q9
VR8
IC17 Q31
IC6
IC16

37)


DATA
LACK
DTP
GND (DAC)
5V (DAC)
GND
VCO
ADJ
TP2
TEST MODE
CN602
PWZ1280-A
PWZ1510-A

PICK-UP ASSEMBLY (PWY1008)


FOCUS
COIL UP
TRACKING
COIL
OUTSIDE
5 4 3 2 1
A B
C D
E
F
6 7 8 9 10
MD
LD
1 5/10

DC voltage of Semiconductors (a

IC1 CXA1081S

Pin No.	V	Pin No.	V
1	0	16	−3
2	1.3	17	−5
3	0	18	0
4	2.4	19	0
5	2.8	20	0
6	−4.8	21	−4.9
7	0	22	0
8	0	23	−1
9	0	24	−2.1
10	0	25	0
11	0	26	2.5
12	−1.2	27	2.4
13	−0.1	28	5
14	0	29	0
15	−3.1	30	5

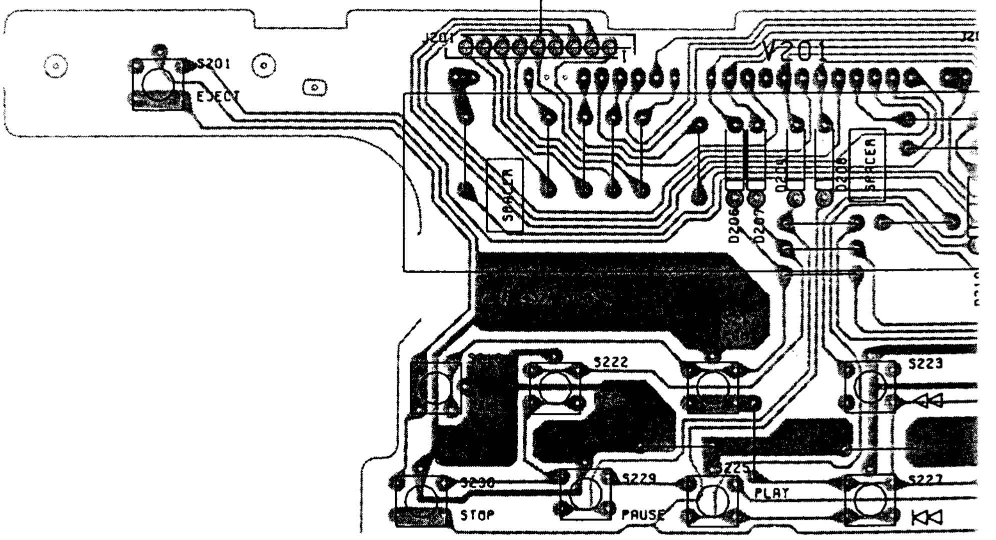
IC2 CXA1082BS

Pin No.	V	Pin No.	V
1	−5	25	−5
2	0	26	0
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	2.5
10	0	34	2.5
11	0.2	35	2.3
12	0	36	2.3
13	0.2	37	3.5
14	0	38	2.4
15	0	39	5
16	5	40	2.5
17	0	41	5
18	0	42	2.5
19	0	43	5
20	0	44	0
21	0	45	0.45
22	0	46	2.5
23	−4.1	47	5
24	5	48	0

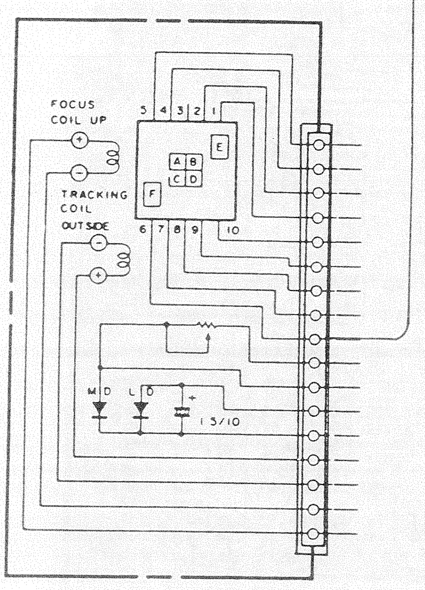
IC3 CXD1130QZ

Pin No.	V
1	2.5
2	5
3	2.5
4	2.8
5	2.4
6	2.5
7	5
8	2.4
9	2.4
10	0
11	1.8
12	0
13	5
14	5
15	5
16	5
17	0
18	5
19	0
20	5
21	0
22	0
23	2.0
24	0
25	5

⊙ FUNCTION BOARD ASSEMB
(PWZ1542)


S201
EJECT
J201
V201
SPACER
SPACER
D206
D207
D214
D208
S222
S223
S230
STOP
S229
PAUSE
S225
PLAY
S227

PICK-UP ASSEMBLY (PWY1008)



DC voltage of Semiconductors (at PLAY state)

IC1 CXA1081S

Pin No.	V	Pin No.	V
1	0	16	−3
2	1.3	17	−5
3	0	18	0
4	2.4	19	0
5	2.8	20	0
6	−4.8	21	−4.9
7	0	22	0
8	0	23	−1
9	0	24	−2.1
10	0	25	0
11	0	26	2.5
12	−1.2	27	2.4
13	−0.1	28	5
14	0	29	0
15	−3.1	30	5

IC2 CXA1082BS

Pin No.	V	Pin No.	V
1	−5	25	−5
2	0	26	0
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	2.5
10	0	34	2.5
11	0.2	35	2.3
12	0	36	2.3
13	0.2	37	3.5
14	0	38	2.4
15	0	39	5
16	5	40	2.5
17	0	41	5
18	0	42	2.5
19	0	43	5
20	0	44	0
21	0	45	0.45
22	0	46	2.5
23	−4.1	47	5
24	5	48	0

IC3 CXD1130QZ

Pin No.	V	Pin No.	V	Pin No.	V	Pin No.	V
1	2.5	26	5	51	2.3	76	2.3
2	5	27	2.5	52	0	77	2.3
3	2.5	28	5	53	2.2	78	1.2
4	2.8	29	1.1	54	2.2	79	2.5
5	2.4	30	1.1	55	5	80	2.5
6	2.5	31	1.1	56	0		
7	5	32	1.1	57	0		
8	2.4	33	5	58	0		
9	2.4	34	1.1	59	0		
10	0	35	1.1	60	1.3		
11	1.8	36	1.1	61	1.3		
12	0	37	1.1	62	0		
13	5	38	2.5	63	0		
14	5	39	2.5	64	0		
15	5	40	2.5	65	0		
16	5	41	2.5	66	0		
17	0	42	1.9	67	0		
18	5	43	2.5	68	2.5		
19	0	44	2.5	69	2.5		
20	5	45	1.9	70	2.3		
21	0	46	2.5	71	5		
22	0	47	2.5	72	0		
23	2.0	48	2.5	73	5		
24	0	49	4.2	74	0		
25	5	50	2.5	75	2.4		

IC4 LH5116-15

Pin No.	V	Pin No.	V
1	1.9	13	1.1
2	2.5	14	1.1
3	2.5	15	1.1
4	1.9	16	1.1
5	2.5	17	1.1
6	2.5	18	2.5
7	2.5	19	2.5
8	2.5	20	2.5
9	1.1	21	4.4
10	1.1	22	2.5
11	1.1	23	2.5
12	0	24	5

IC5 LC7881-C

Pin No.	V	Pin No.	V
1	2.2	11	0
2	4.4	12	0
3	4.4	13	0
4	5.0	14	5.0
5	0	15	0
6	2.6	16	0
7	2.6	17	0
8	2.6	18	0
9	2.5	19	0
10	5.0	20	2.2

IC6 PD4150A

Pin No.	V	Pin No.	V	Pin No.	V
1	−13.4	26	5.0	51	0
2	−17.8	27	5.0	52	5.0
3	−11.95	28	5.0	53	−5.0
4	−12.55	29	0	54	−19.7
5	0	30	2.3	55	−7.4
6	5.0	31	2.5	56	−26.1
7	5.0	32	0	57	−5.0
8	2.0	33	0	58	−22.8
9	5.0	34	5.0	59	−7.8
10	0	35	0	60	−12.7
11	5.0	36	0	61	−4.2
12	5.0	37	0	62	−5.75
13	0	38	5.0	63	−9.6
14	0	39	5.0	64	5.0
15	0	40	−23.3		
16	0	41	−23.3		
17	5.0	42	−23.3		
18	0	43	−23.3		
19	5.0	44	−23.3		
20	5.0	45	−23.3		
21	0	46	−23.3		
22	0	47	−23.0		
23	0	48	−22.9		
24	0	49	−25.3		
25	5.0	50	5.0		

IC10 M51955AL

Pin No.	V
1	5.0
2	1.7
3	0
4	0
5	5.0

IC12 NJM79M05FA

Pin No.	V
(GND)1	0
(IN) 2	−9.6
(OUT)3	−5.0

IC11 NJM78M05FA

Pin No.	V
(IN) 1	9.8
(GND)2	0
(OUY)3	5.0

IC16 TA8410K

Pin No.	V
1	0
2	0
3	0
4	0
5	−9.6
6	0
7	0
8	0
9	0
10	9.8

IC18 TA8410K

Pin No.	V
1	−1.1
2	−1.1
3	−0.2
4	−0.2
5	−9.6
6	0
7	0
8	0
9	0
10	9.8

IC17 TA8410K

Pin No.	V
1	−1.05
2	−1.15
3	0
4	0
5	−9.6
6	0
7	0
8	−0.8
9	−0.6
10	9.8

NJM4558D-D

IC24

Pin No.	V
1	2.2
2	2.2
3	2.2
4	−5.0
5	2.2
6	2.2
7	2.2
8	5.0

IC25

Pin No.	V
1	0
2	0
3	0
4	−5.0
5	0
6	0
7	0
8	5.0

Transistors

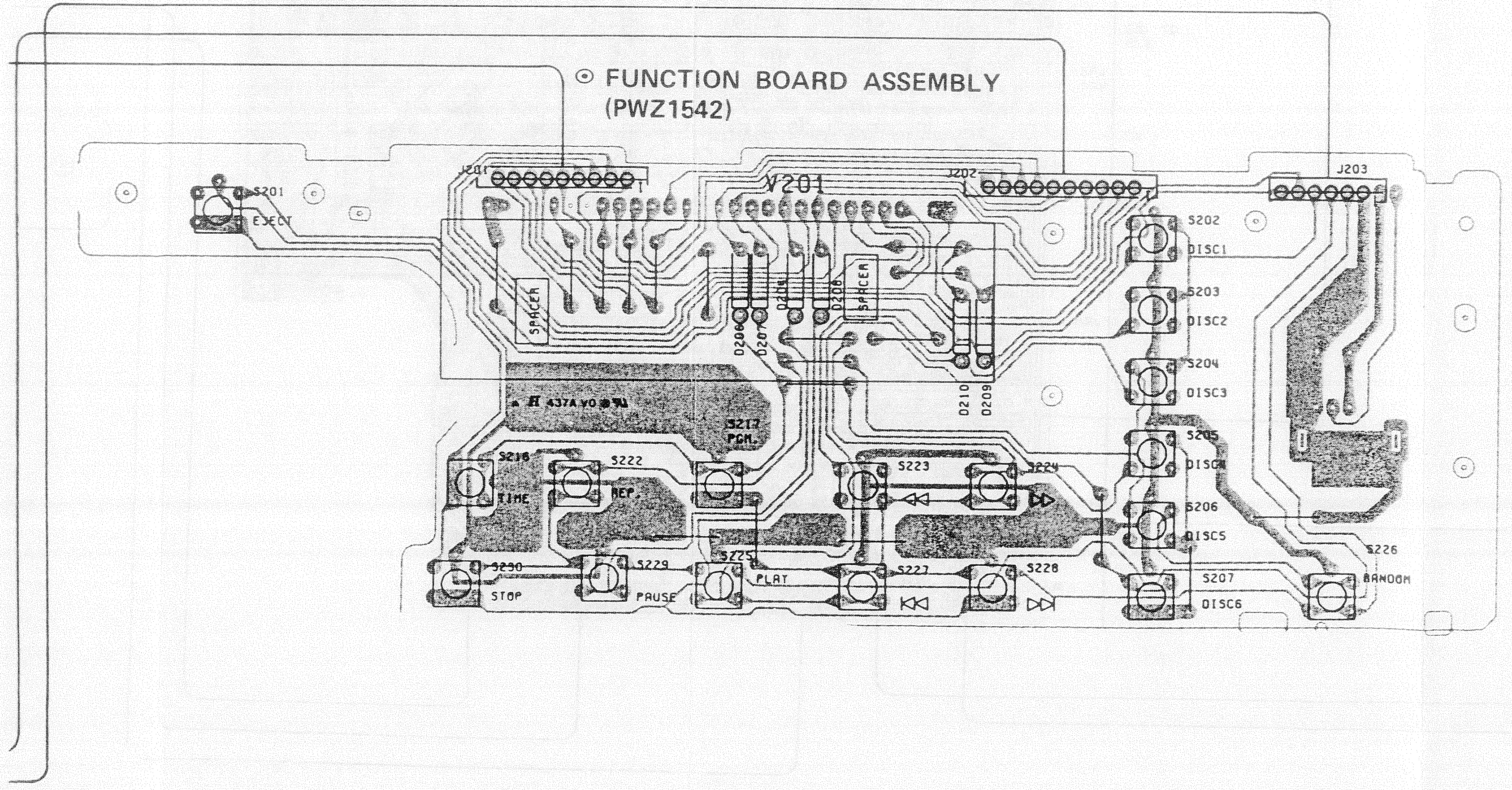
Q No.	V		
	E	C	B
Q1	3.9	2.0	3.2
Q5	0	0	0.7
Q6	5.0	5.0	0
Q7	0	−0.2	5.0
Q8	0	0	0.7
Q9	0	0.7	−5.0
Q11	5.0	5.0	0
Q12	−5.0	−5.0	5.0
Q13	0	0	−5.0
Q14	0	0	−5.0
Q16	0	0	−5.0
Q17	0	0	−5.0
Q19	0	0	−4.9
Q31	0	0	5.0

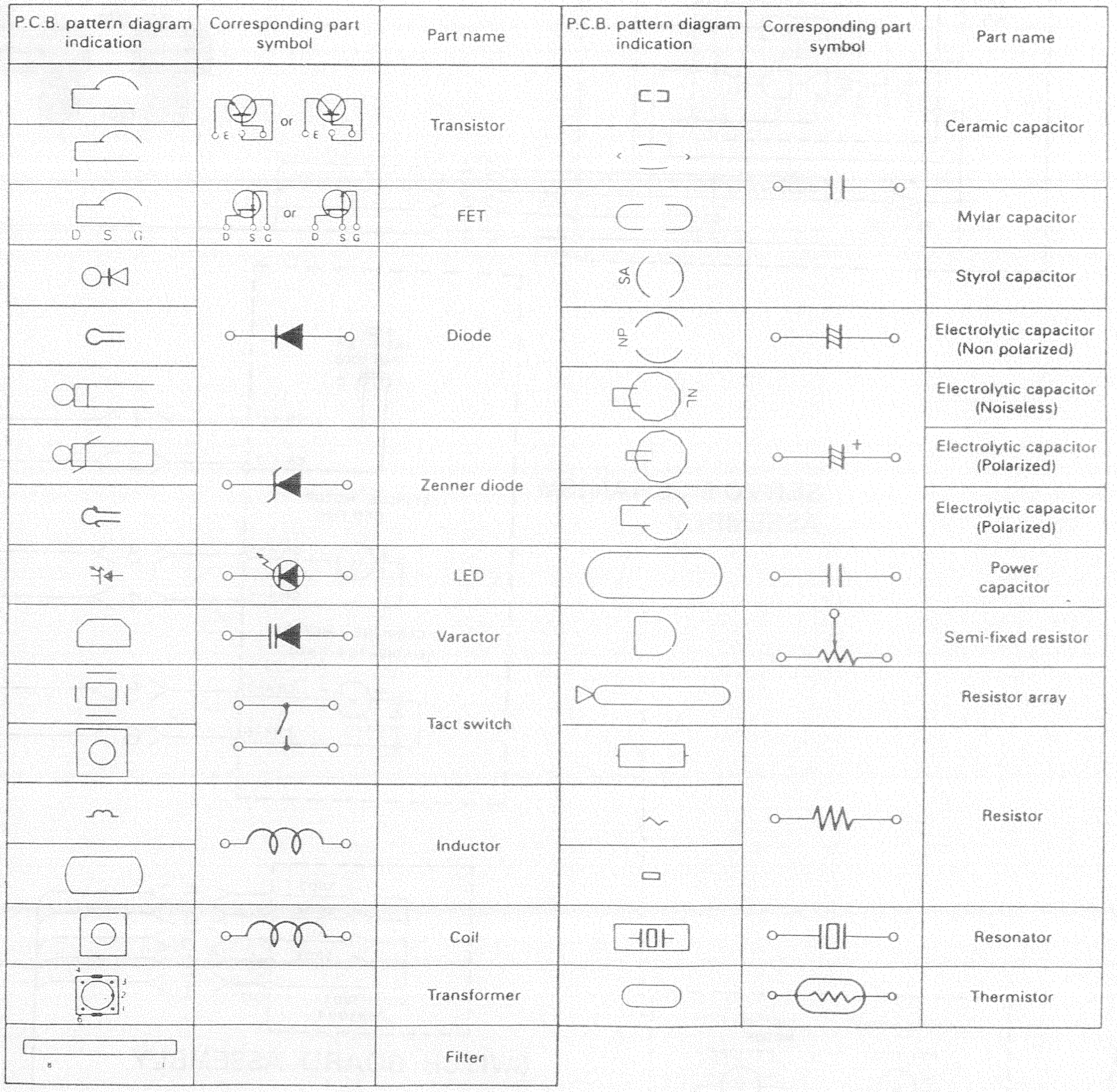
Diodes

D No.	V	
	Anode	Cathode
D10	−25.6	1.0
D17	5.0	5.0
D18	0	5.0
D19	5.0	4.8
D25	1) −9.8	2) 0
	3) −9.7	4) 0
D204	−13.5	3.4
D206	−5.65	4.3
D207	−8.0	4.0
D208	−24.2	3.0
D209	−12.65	3.3
D210	−11.8	3.7

Anode →+ Cathode

⊙ FUNCTION BOARD ASSEMBLY (PWZ1542)




or
C E B
D S G
SA
NP
NL

P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
		FET			Mylar capacitor
					Styrol capacitor
		Diode			Electrolytic capacitor (Non polarized)
					Electrolytic capacitor (Noiseless)
		Zenner diode			Electrolytic capacitor (Polarized)
					Electrolytic capacitor (Polarized)
		LED			Power capacitor
		Varactor			Semi-fixed resistor
		Tact switch			Resistor array
		Inductor			Resistor
		Coil			Resonator
		Transformer			Thermistor
		Filter			

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

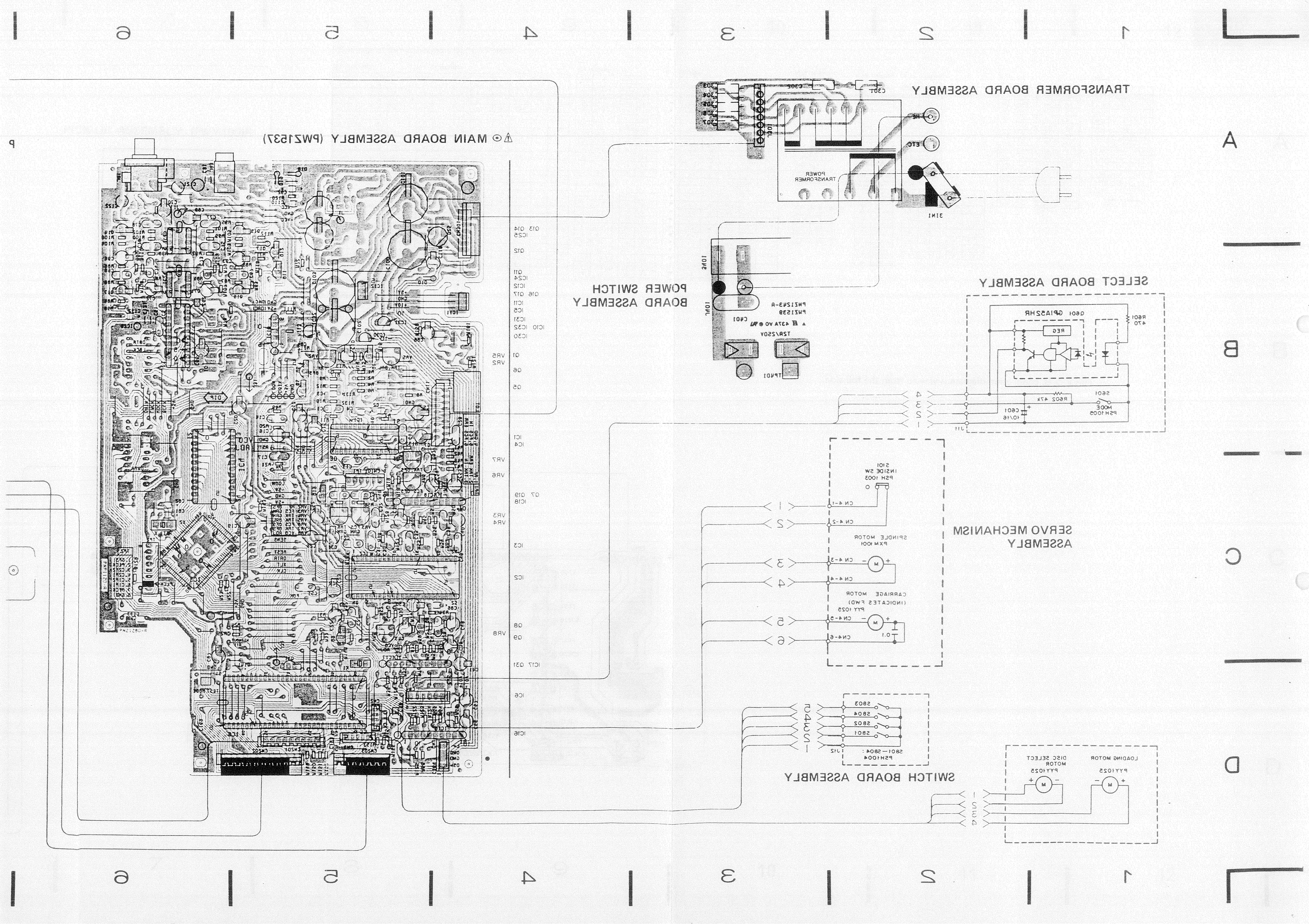
A

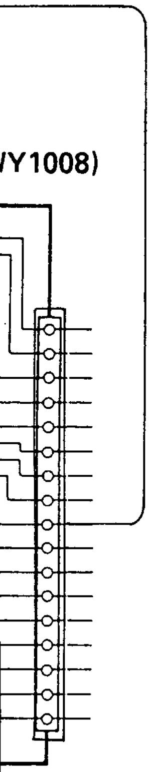
B

This P.C. B. connection diagram is viewed from the foil side.

C

D


MAIN BOARD ASSEMBLY (PWZ1537)
TRANSFORMER BOARD ASSEMBLY
POWER TRANSFORMER
POWER SWITCH BOARD ASSEMBLY
SELECT BOARD ASSEMBLY
Q601 GP1A52HR
R601 470
R602 47k
S601 MODE PSH1005
C601 10/16
SERVO MECHANISM ASSEMBLY
S101 INSIDE SW PSH1003
SPINDLE MOTOR PXM1001
CARRIAGE MOTOR (INDICATES FWD) PYY1025
SWITCH BOARD ASSEMBLY
S801–S804 : PSH1004
LOADING MOTOR PYY1025
DISC SELECT MOTOR PYY1025
A
B
C
D
1
2
3
4
5
6



DC voltage of Semiconductors (at PLAY state)

IC 1 CXA1081S

Pin No.	V	Pin No.	V
1	0	16	−3
2	1.3	17	−5
3	0	18	0
4	2.4	19	0
5	2.8	20	0
6	−4.8	21	−4.9
7	0	22	0
8	0	23	−1
9	0	24	−2.1
10	0	25	0
11	0	26	2.5
12	−1.2	27	2.4
13	−0.1	28	5
14	0	29	0
15	−3.1	30	5

IC 2 CXA1082BS

Pin No.	V	Pin No.	V
1	−5	25	−5
2	0	26	0
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	2.5
10	0	34	2.5
11	0.2	35	2.3
12	0	36	2.3
13	0.2	37	3.5
14	0	38	2.4
15	0	39	5
16	5	40	2.5
17	0	41	5
18	0	42	2.5
19	0	43	5
20	0	44	0
21	0	45	0.45
22	0	46	2.5
23	−4.1	47	5
24	5	48	0

IC 3 CXD1130QZ

Pin No	V	Pin No.	V	Pin No.	V	Pin No.	V
1	2.5	26	5	51	2.3	76	2.3
2	5	27	2.5	52	0	77	2.3
3	2.5	28	5	53	2.2	78	1.2
4	2.8	29	1.1	54	2.2	79	2.5
5	2.4	30	1.1	55	5	80	2.5
6	2.5	31	1.1	56	0		
7	5	32	1.1	57	0		
8	2.4	33	5	58	0		
9	2.4	34	1.1	59	0		
10	0	35	1.1	60	1.3		
11	1.8	36	1.1	61	1.3		
12	0	37	1.1	62	0		
13	5	38	2.5	63	0		
14	5	39	2.5	64	0		
15	5	40	2.5	65	0		
16	5	41	2.5	66	0		
17	0	42	1.9	67	0		
18	5	43	2.5	68	2.5		
19	0	44	2.5	69	2.5		
20	5	45	1.9	70	2.3		
21	0	46	2.5	71	5		
22	0	47	2.5	72	0		
23	2.0	48	2.5	73	5		
24	0	49	4.2	74	0		
25	5	50	2.5	75	2.4		

IC 4 LH5116-15

Pin No	V	Pin No.	V
1	1.9	13	1.1
2	2.5	14	1.1
3	2.5	15	1.1
4	1.9	16	1.1
5	2.5	17	1.1
6	2.5	18	2.5
7	2.5	19	2.5
8	2.5	20	2.5
9	1.1	21	4.4
10	1.1	22	2.5
11	1.1	23	2.5
12	0	24	5

IC 5 LC7881-C

Pin No.	V	Pin No.	V
1	2.2	11	0
2	4.4	12	0
3	4.4	13	0
4	5.0	14	5.0
5	0	15	0
6	2.6	16	0
7	2.6	17	0
8	2.6	18	0
9	2.5	19	0
10	5.0	20	2.2

IC 6 PD4150A

Pin No	V	Pin No.	V	Pin No.	V
1	−13.4	26	5.0	51	0
2	−17.8	27	5.0	52	5.0
3	−11.95	28	5.0	53	−5.0
4	−12.56	29	0	54	−19.7
5	0	30	2.3	55	−7.4
6	5.0	31	2.5	56	−26.1
7	5.0	32	0	57	−5.0
8	2.0	33	0	58	−22.8
9	5.0	34	5.0	59	−7.8
10	0	35	0	60	−12.7
11	5.0	36	0	61	−4.2
12	5.0	37	0	62	−5.75
13	0	38	5.0	63	−9.6
14	0	39	5.0	64	5.0
15	0	40	−23.3		
16	0	41	−23.3		
17	5.0	42	−23.3		
18	0	43	−23.3		
19	5.0	44	−23.3		
20	5.0	45	−23.3		
21	0	46	−23.3		
22	0	47	−23.0		
23	0	48	−22.9		
24	0	49	−25.3		
25	5.0	50	5.0		

IC 10 M51955AL

Pin No.	V
1	5.0
2	1.7
3	0
4	0
5	5.0

IC 12 NJM79M05FA

Pin No.	V
(GND)1	0
(IN) 2	−9.6
(OUT)3	−5.0

IC 11 NJM78M05FA

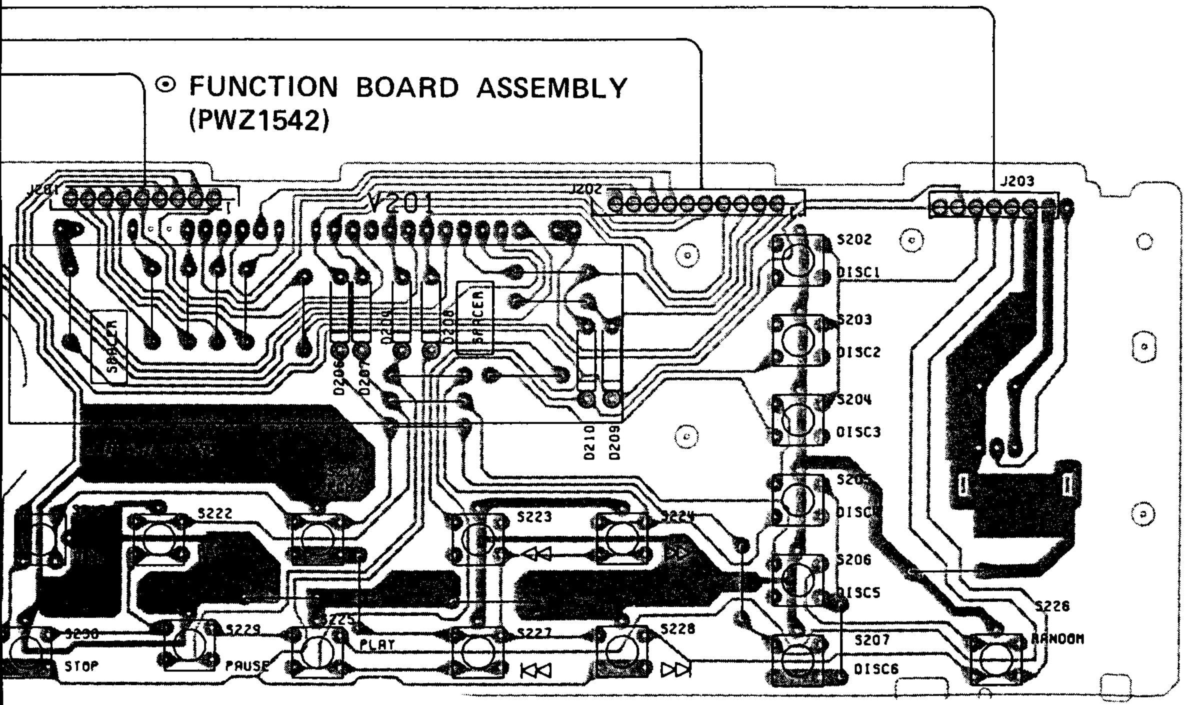
Pin No.	V
(IN) 1	9.8
(GND)2	0
(OUY)3	5.0

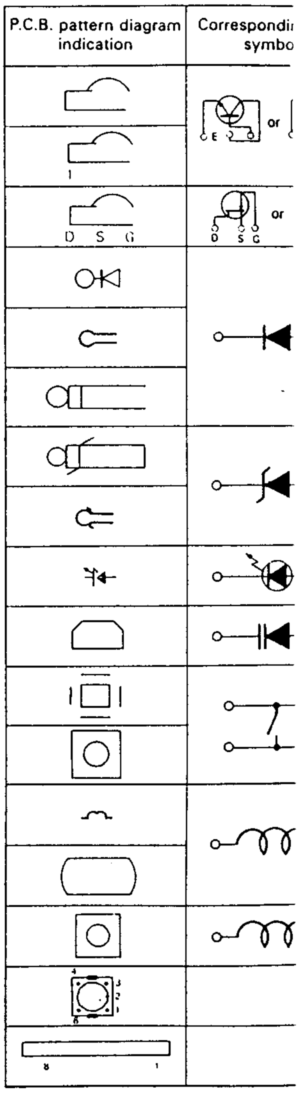
IC 16

Pin No
1
2
3
4
5
6
7
8
9
10

IC 17

Pin No
1
2
3
4
5
6
7
8
9
10


⊙ FUNCTION BOARD ASSEMBLY (PWZ1542)
J201
V201
J202
J203
S202
DISC1
S203
DISC2
S204
DISC3
S205
DISC4
S206
DISC5
S207
DISC6
S226
RANDOM
S222
S223
S224
S225
PLAY
S227
S228
S229
PAUSE
S230
STOP
SPACER
SPACER
D206
D207
D211
D208
D210
D209


P.C.B. pattern diagram indication
Correspondi
symbo
E
or
1
D S G
D S G
or
4
3
2
1
6
8
1

1. This P.C.B. connection diagram is
2. The parts which have been mount
above Table.
3. The capacitor terminal marked wit
4. The diode marked with O shows c
5. The transistor terminal marked wit

V
1.1
1.1
1.1
1.1
1.1
2.5
2.6
2.5
4.4
2.5
2.5
5

V
0
0
0
5.0
0
0
0
0
0
2.2

IC 6 PD4150A

Pin No.	V	Pin No.	V	Pin No.	V
1	−13.4	26	5.0	51	0
2	−17.8	27	5.0	52	5.0
3	−11.96	28	5.0	53	−5.0
4	−12.55	29	0	54	−19.7
5	0	30	2.3	55	−7.4
6	5.0	31	2.5	56	−26.1
7	5.0	32	0	57	−5.0
8	2.0	33	0	58	−22.8
9	5.0	34	5.0	59	−7.8
10	0	35	0	60	−12.7
11	5.0	36	0	61	−4.2
12	5.0	37	0	62	−5.75
13	0	38	5.0	63	−9.6
14	0	39	5.0	64	5.0
15	0	40	−23.3		
16	0	41	−23.3		
17	5.0	42	−23.3		
18	0	43	−23.3		
19	5.0	44	−23.3		
20	5.0	45	−23.3		
21	0	46	−23.3		
22	0	47	−23.0		
23	0	48	−22.9		
24	0	49	−25.3		
25	5.0	50	5.0		

IC 10 M51955AL

Pin No.	V
1	5.0
2	1.7
3	0
4	0
5	5.0

IC 12 NJM79M05FA

Pin No.	V
(GND) 1	0
(IN) 2	−9.6
(OUT) 3	−5.0

IC 11 NJM78M05FA

Pin No.	V
(IN) 1	9.8
(GND) 2	0
(OUY) 3	5.0

IC 16 TA8410K

Pin No.	V
1	0
2	0
3	0
4	0
5	−9.6
6	0
7	0
8	0
9	0
10	9.8

IC 17 TA8410K

Pin No.	V
1	−1.05
2	−1.15
3	0
4	0
5	−9.6
6	0
7	0
8	−0.8
9	−0.6
10	9.8

IC 18 TA8410K

Pin No.	V
1	−1.1
2	−1.1
3	−0.2
4	−0.2
5	−9.6
6	0
7	0
8	0
9	0
10	9.8

NJM4558D-D

IC 24

Pin No.	V
1	2.2
2	2.2
3	2.2
4	−5.0
5	2.2
6	2.2
7	2.2
8	5.0

IC 25

Pin No.	V
1	0
2	0
3	0
4	−5.0
5	0
6	0
7	0
8	5.0

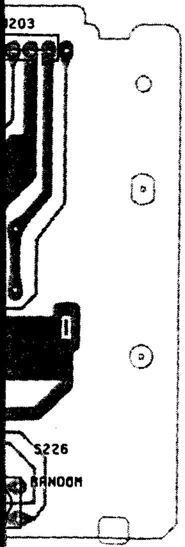
Transistors

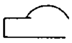
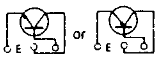
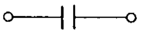
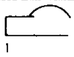
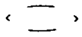
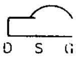
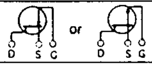
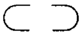
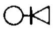
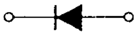
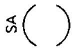
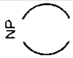
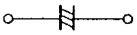
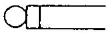
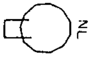
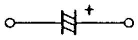
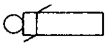
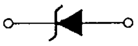
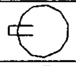
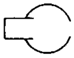
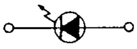
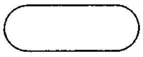
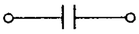
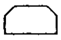
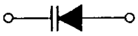
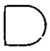
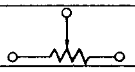
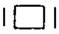
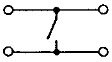
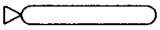
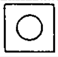
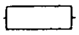
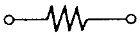
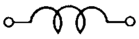
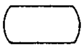
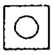
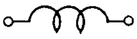
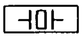
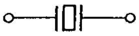
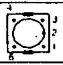
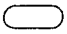
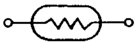
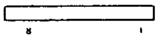
Q No.	V		
	E	C	B
Q 1	1.9	2.0	3.2
Q 5	0	0	0.7
Q 6	5.0	5.0	0
Q 7	0	−0.2	5.0
Q 8	0	0	0.7
Q 9	0	0.7	−5.0
Q 11	5.0	5.0	0
Q 12	−5.0	−5.0	5.0
Q 13	0	0	−5.0
Q 14	0	0	−5.0
Q 16	0	0	−5.0
Q 17	0	0	−5.0
Q 19	0	0	−4.9
Q 31	0	0	5.0

Diodes

D No.	V	
	Anode	Cathode
D 10	−25.6	1.0
D 17	5.0	5.0
D 18	0	5.0
D 19	5.0	4.8
D 25	1) −9.8	2) 0
	3) −9.7	4) 0
D 204	−13.5	3.4
D 206	−5.66	4.3
D 207	−8.0	4.0
D 208	−24.2	3.0
D 209	−12.65	3.3
D 210	−11.8	3.7

Anode →+ Cathode



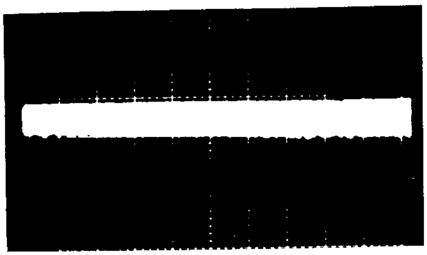
P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
					
		FET			Mylar capacitor
		Diode			Styrol capacitor
					Electrolytic capacitor (Non polarized)
					Electrolytic capacitor (Noiseless)
		Zenner diode			Electrolytic capacitor (Polarized)
					Electrolytic capacitor (Polarized)
		LED			Power capacitor
		Varactor			Semi-fixed resistor
		Tact switch			Resistor array
					Resistor
		Inductor			
					
		Coil			Resonator
		Transformer			Thermistor
		Filter			

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

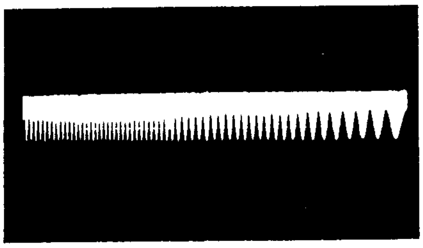
WAVEFORMS

NOTE: The encircled numbers denote measuring points in the circuit and pattern diagrams.

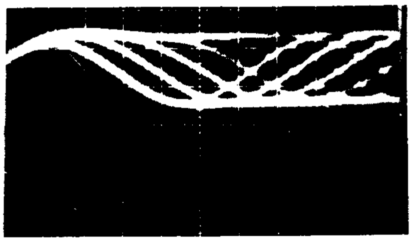
① CN11-5 Pin : PLAY MODE
100mV/div 5m sec/div



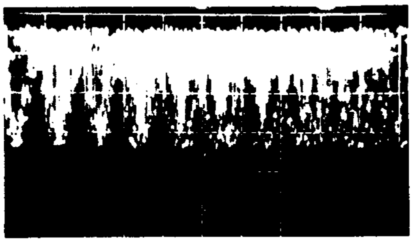
① CN11-5 Pin: SEARCH MODE
100mV/div 5m sec/div



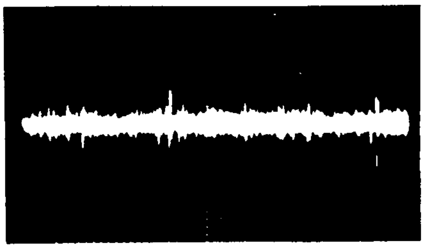
② TP1-1 Pin: PLAY
1V/div 200n sec/div



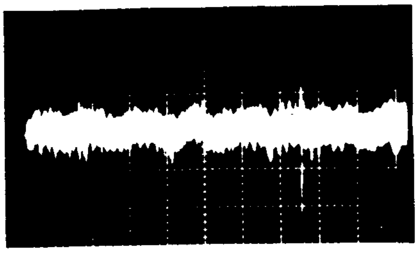
② TP1-1 Pin: SEARCH
500mV/div 5m sec/div



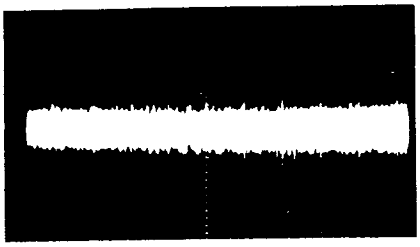
③ TP1-6 Pin: PLAY
500mV/div 10m sec/div



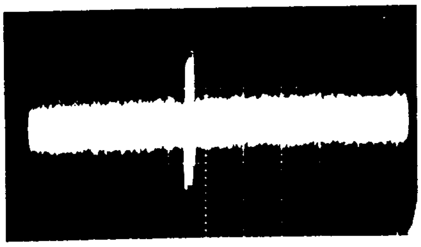
③ TP1-6 Pin: SEARCH
500mV/div 10mS/div



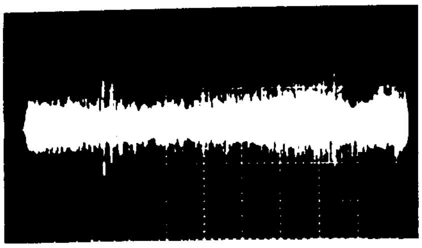
④ TP1-2 Pin: PLAY
1V/div 10mS/div



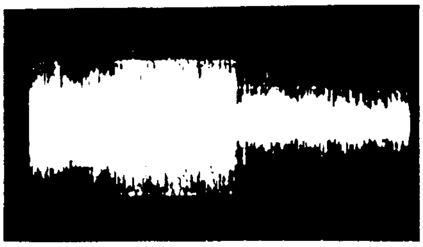
④ TP1-2 Pin: SEARCH
1V/div 10mS/div



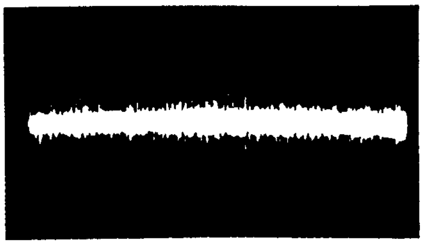
⑤ IC18-1 : PLAY Y
0.2V/div 10mS/div



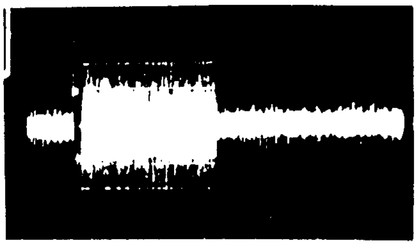
⑤ IC18-1 : PLAY
0.2V/div 10mS/div



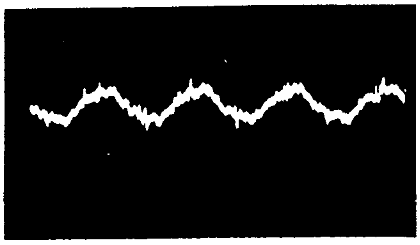
⑥ IC18-9 : PLAY
0.2V/div 10mS/div



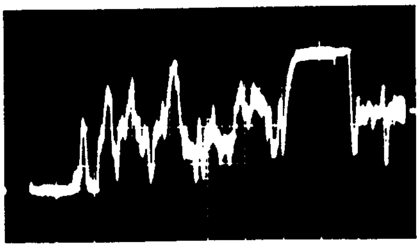
⑥ IC18-9 : PLAY
0.2V/div 10mS/div



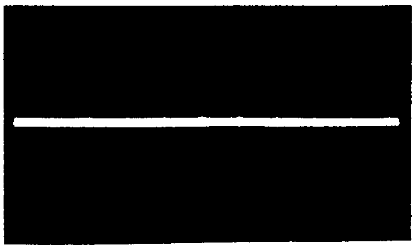
⑦ IC17-1 : PLAY
2V/div 50mS/div



⑦ IC17-1 : SEARCH
2V/div 100mS/div

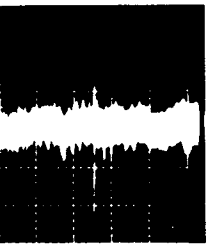


⑧ IC2,33,34 Pin : PLAY
2V/div 10mS/div

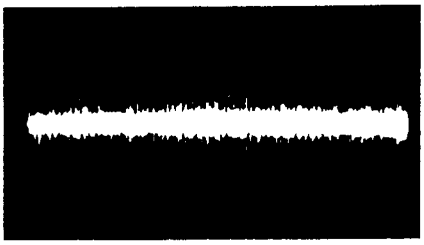


TE: The encircled numbers denote measuring points in the circuit and pattern diagrams.

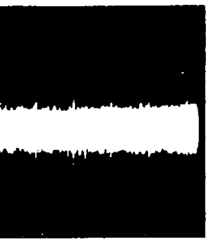
CH
10mS/div



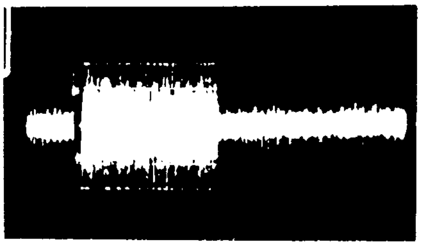
⑥ IC18-9 : PLAY
0.2V/div 10mS/div



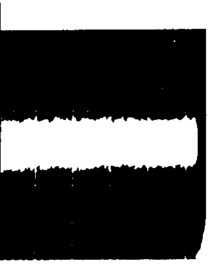
10mS/div



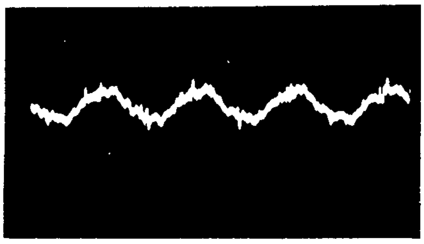
⑥ IC18-9 : PLAY
0.2V/div 10mS/div



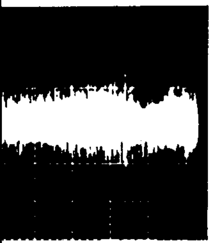
CH
10mS/div



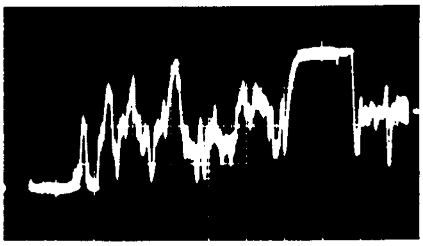
⑦ IC17-1 : PLAY
2V/div 50mS/div



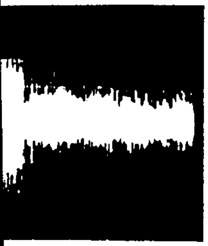
Y
10mS/div



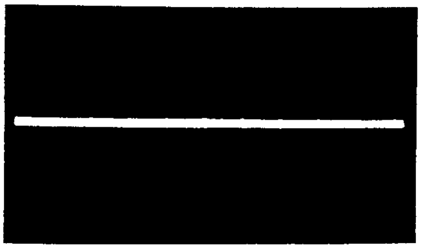
⑦ IC17-1 : SEARCH
2V/div 100mS/div



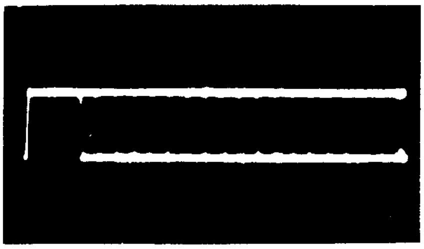
10mS/div



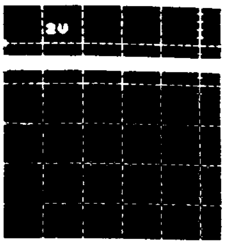
⑧ IC2,33,34 Pin : PLAY
2V/div 10mS/div



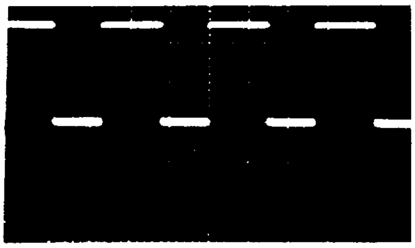
⑨ IC1 27 Pin: PLAY
2V/div 500 μ sec/ div



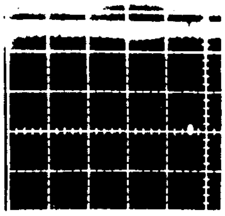
⑫ TP2-1: PLAY
2V/div



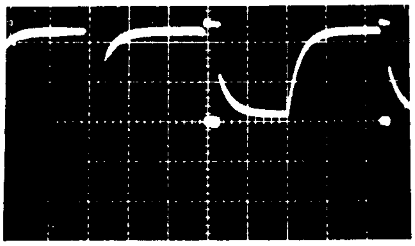
⑩ IC3-4: PLAY
2V/div 50μS/div



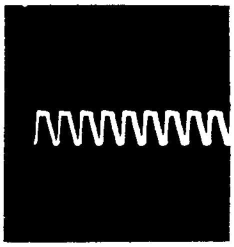
⑫ TP2-1: SEARCH
2V/div



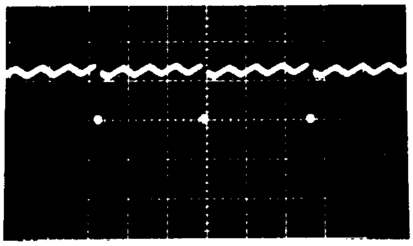
⑩ IC3-4: SEARCH
2V/div 100mS/div



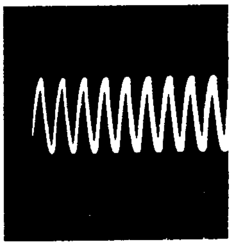
⑬ IC2-38: PLAY
2V/div



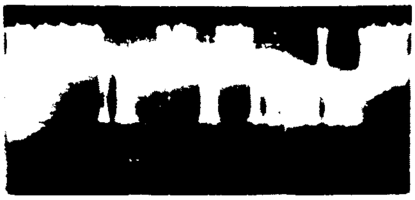
⑪ IC3-3: PLAY
2V/div 200μS/div



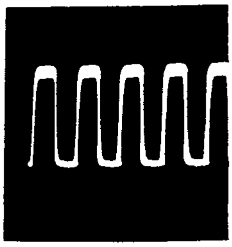
⑭ IC3-8: PLAY
2V/div



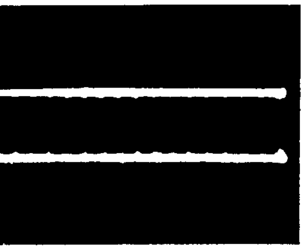
⑪ IC3-3: SEARCH
2V/div 10mS/div



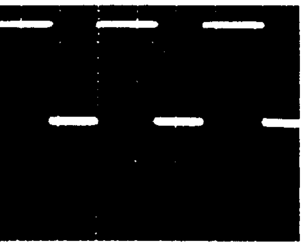
⑮ TP2-2: PLAY
2V/div



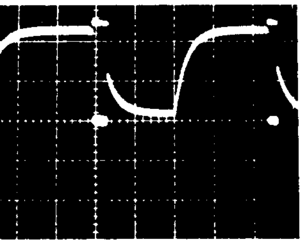
Pin: PLAY
div 500 μ sec/div



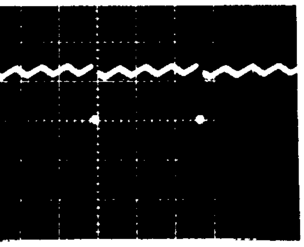
PLAY
div 50μS/div



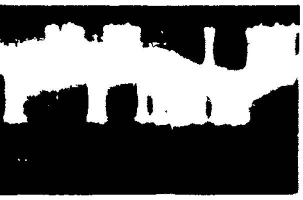
SEARCH
div 100mS/div



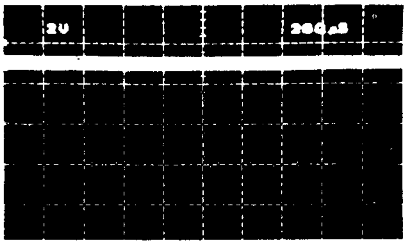
PLAY
div 200μS/div



SEARCH
div 10mS/div



⑫ TP2-1: PLAY
2V/div 200μS/div



⑫ TP2-1: SEARCH
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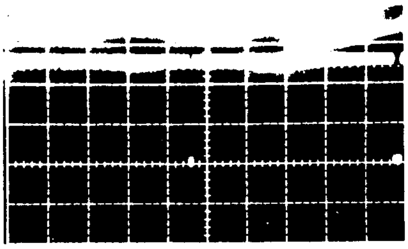
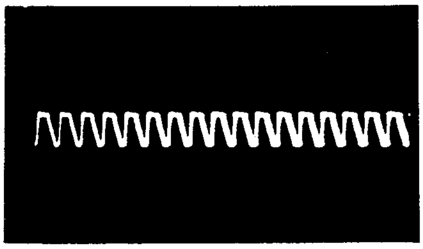
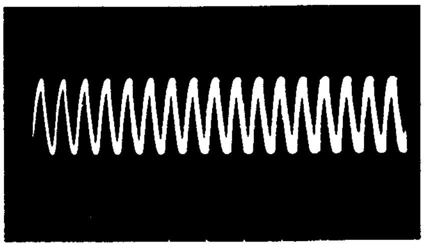


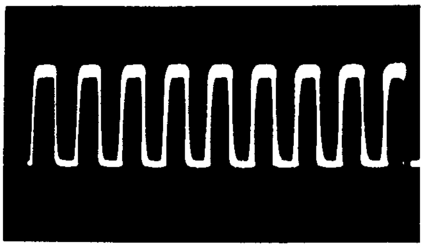
⑬ IC2-38: PLAY
2V/div 200nS/div



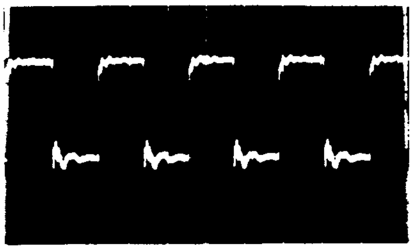
⑭ IC3-8: PLAY
2V/div 200nS/div



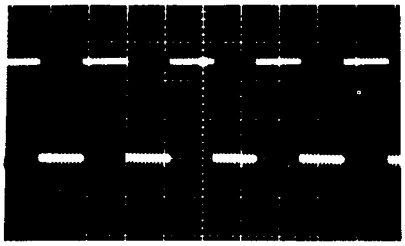
⑮ TP2-2: PLAY
2V/div 200nS/div



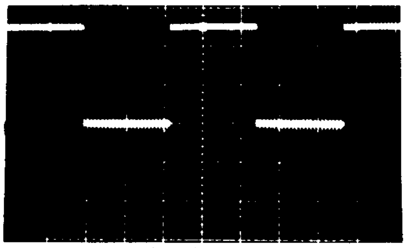
⑯ IC3-76: STOP
2V/div 200nS/div



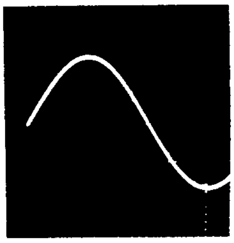
⑰ IC3-79: STOP
2V/div 5μS/div



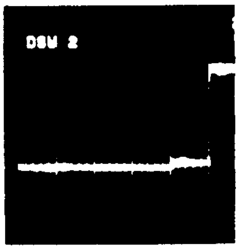
⑱ IC3-80: STOP
2V/div 5μS/div



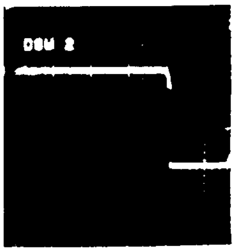
⑲ OUTPUT Lch: PLA
2V/div



⑳ IC10-5: POWER ON
2V/div



⑳ IC10-5: POWER-OF
2V/div

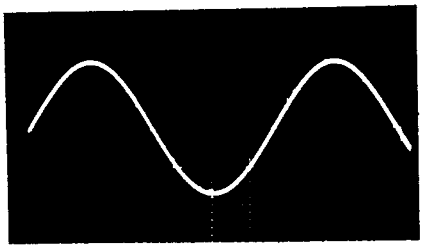


/div

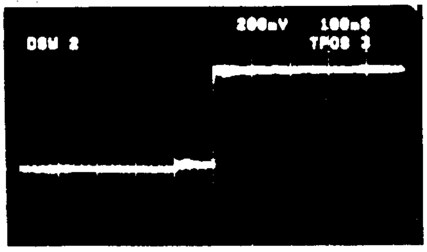
iv

iv

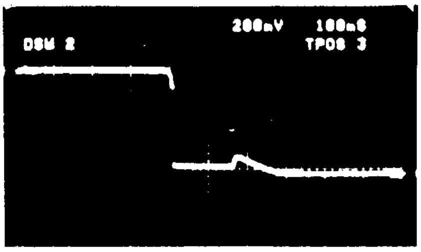
⑲ OUTPUT Lch: PLAY
2V/div 50μS/div



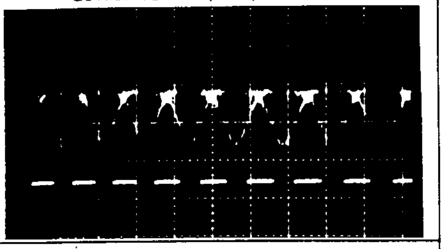
⑳ IC10-5: POWER ON
2V/div 100mS/div



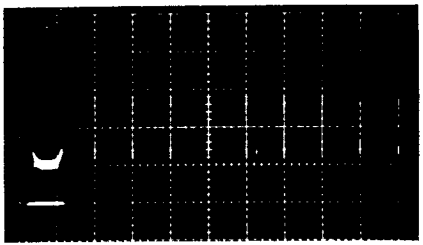
⑳ IC10-5: POWER-OFF
2V/div 100mS/div



㉑ IC1-22: TR OPEN
1mS/div
Upper TP1-1, 1V/div
Lower IC1-22, 2V/div



㉒ IC1-21: DFCT
1mS/div
Upper TP1-1, 1V/div
Lower IC1-21, 5V/div



8. ELECTRICAL PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω 56×10^1 561........................RD1/4PS 5 6 1 J
47kΩ 47×10^3 473........................RD1/4PS 4 7 3 J
0.5Ω 0R5...RN2H 0 R 5 K
1Ω 010...RS1P 0 1 0 K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).
5.62kΩ 562×10^1 5621......................RN1/4SR 5 6 2 1 F

Miscellaneous Parts

P.C. BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
⚠ ⊙	Main board assembly	PWZ1537
⊙	Function board assembly	PWZ1542
	Power switch board assembly	
	Transformer board assembly	
	Switch board assembly	
	Select board assembly	

OTHERS

Mark	Symbol & Description	Part No.
	Pick-up assembly	PWY1008
⚠	Strain relief	CM-22B
⚠	AC power cord	PDG1008
⚠	Power transformer	PTT1069
	Motor assembly (DISC SELECT, DISC LOADING, CARRIAGE)	PYY1025
	Motor (DISC SELECT, DISC LOADING, CARRIAGE)	PXM1002
	Spindle motor	PXM1001
	Slide switch (INSIDE SW)	PSH1003

⊙ Main Board Assembly (PWZ1537)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC1	CXA1081S
	IC2	CXA1082BS
	IC3	CXD1130Q
⚠	IC30–IC32	ICP-N10
	IC5	LC7881
	IC4	LH5116-15
	IC10	M51955AL
	IC24, IC25	NJM4558D
⚠	IC11	NJM78M05FA
⚠	IC12	NJM79M05FA
	IC6	PD4150A
⚠	IC16–IC18	TA8410K
	Q6, Q11	DTA124ES
	Q12, Q19, Q31	DTC124ES
	Q1	2SA1399
	Q7	2SA933S
	Q5, Q8, Q9, Q16, Q17	2SC1740S
	Q13, Q14	2SD1302
⚠	D25	WL02ML-5004
⚠	D10	1SR139-100
	D17–D19	1SS254

SWITCH

Mark	Symbol & Description	Part No.
	S1 Tact switch	PSG-064

Mark	Symbol & Description	Part No.
	C2–C4, C81, C82	CCCCH300J50
	C91, C92	CCCSL101J50
	C40	CEANP4R7M25
	C16, C22	CEASR47M50
	C10, C43, C62	CEAS101M10
	C88	CEAS101M35
	C71, C72, C93, C94	CEAS220M16
	C100, C101	CEAS222M16
	C118	CEAS220M35
	C48	CEAS3R3M50
	C5, C7, C12, C15, C19, C20, C23, C26, C36, C38, C41, C50, C52–C54, C56, C57, C66, C69, C70, C97, C98	CEAS330M16
	C34	CEAS4R7M50
	C102, C103	CEAS471M10
	C61, C86, C131–C133, C141, C143	CKCYF103Z50
	C110, C169	CKCYF473Z50
	C30, C51, C121, C122	CQMA102K50

nay be longer than usual or they may be unavail-

e of the safety factor of the part. Therefore, when

shown in the following examples.
560 ohm and 47k ohm (tolerance is shown by J =

J
J

film resistors).
◫ *F*

rk	Symbol & Description	Part No.
	Q6, Q11	DTA124ES
	Q12, Q19, Q31	DTC124ES
	Q1	2SA1399
	Q7	2SA933S
	Q5, Q8, Q9, Q16, Q17	2SC1740S
	Q13, Q14	2SD1302
	D25	WL02ML-5004
	D10	1SR139-100
	D17–D19	1SS254

ITCH

k	Symbol & Description		Part No.
	S1	Tact switch	PSG-064

k	Symbol & Description	Part No.
	C2–C4, C81, C82	CCCCH300J50
	C91, C92	CCCSL101J50
	C40	CEANP4R7M25
	C16, C22	CEASR47M50
	C10, C43, C62	CEAS101M10
	C88	CEAS101M35
	C71, C72, C93, C94	CEAS220M16
	C100, C101	CEAS222M16
	C118	CEAS220M35
	C48	CEAS3R3M50
	C5, C7, C12, C15, C19, C20, C23, C26, C36, C38, C41, C50, C52–C54, C56, C57, C66, C69, C70, C97, C98	CEAS330M16
	C34	CEAS4R7M50
	C102, C103	CEAS471M10
	C61, C86, C131–C133, C141, C143	CKCYF103Z50
	C110, C169	CKCYF473Z50
	C30, C51, C121, C122	CQMA102K50

Mark	Symbol & Description	Part No.
	C14, C17, C46	CQMA103K50
	C31, C32, C35, C39	CQMA104K50
	C29	CQMA272J50
	C13	CQMA332J50
	C11, C21, C28, C37	CQMA333K50
	C77, C78	CQMA471J50
	C1, C27, C47	CQMA472J50
	C75, C76	CQMA561J50
	C73, C74	CQMA562J50
	C67, C68	CQMA683J50

RESISTOR

Mark	Symbol & Description		Part No.
	VR2	Semi-fixed resistor (10kΩ)	VRTB6VS103
	VR3–VR7	Semi-fixed resistor (22kΩ)	VRTB6VS223
	VR8	Semi-fixed resistor (2.2kΩ)	VRTS6VS102
	R30	Metal film resistor	RN1/6PQ3601F
		Other resistors	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description		Part No.
	JA1	2P pin jack	PKB1009
	JA3	Remote control jack	RKN1004
	X2	Crystal resonator	PSS-012
	X1	Ceramic resonator	VSS1014

⊙Function Board Assembly (PWZ1542)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	D204, D206–D210	1SS254

SWITCHES

Mark	Symbol & Description	Part No.
	S201–S207, S216, S217, S222–S230 Tact switch	PSG-065

OTHERS

Mark	Symbol & Description		Part No.
	V201	Fluorescent indicator tube	PEL1022

Pow
SWIT
Mark
⚠

CAP
Mark
⚠

Tran
CAP
Mark

Swit
SWIT
Mark

Sele
SEMI
Mark

SWIT
Mark

CAP
Mark

RESI
Mark

Description	Part No.
46	CQMA103K50
35, C39	CQMA104K50
	CQMA272J50
	CQMA332J50
28, C37	CQMA333K50
	CQMA471J50
7	CQMA472J50
	CQMA561J50
	CQMA562J50
	CQMA683J50

Description	Part No.
Semi-fixed resistor (10kΩ)	VRTB6VS103
Semi-fixed resistor (22kΩ)	VRTB6VS223
Semi-fixed resistor (2.2kΩ)	VRTS6VS102
Metal film resistor	RN1/6PQ3601F
Other resistors	RD1/6PM☐☐☐J

Description	Part No.
2P pin jack	PKB1009
Remote control jack	RKN1004
Crystal resonator	PSS-012
Ceramic resonator	VSS1014

d Assembly (PWZ1542)

RS

escription	Part No.
–D210	1SS254

escription	Part No.
, S216, S217, Tact switch	PSG-065

escription	Part No.
Fluorescent indicator tube	PEL1022

Power Switch Board Assembly

SWITCH

Mark	Symbol & Description		Part No.
⚠	S401	Power switch	PSA-009

CAPACITOR

Mark	Symbol & Description	Part No.
⚠	C401	RCG-009

Transformer Board Assembly

CAPACITORS

Mark	Symbol & Description	Part No.
	C301, C303	CKPYF103Z50
	C302, C304–C307	CKPYX103N25

Switch Board Assembly

SWITCHES

Mark	Symbol & Description		Part No.
	S801–S804	Slide switch (LOADING POSITION, MAGAZINE)	PSH1004

Select Board Assembly

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
	Q601	GP1A52HR

SWITCH

Mark	Symbol & Description		Part No.
	S601	Slide switch (MODE)	PSH1005

CAPACITOR

Mark	Symbol & Description	Part No.
	C601	CEAL100M16

RESISTORS

Mark	Symbol & Description	Part No.
	All resistors	RD1/6PM☐☐☐J

9. ADJUSTMENTS

The adjustment items of this model should be performed in the order as shown below.

• Adjustment and check Items

1. Tracking offset. focus offset and RF offset adjustments
2. RF level adjustment
3. LD (Laser Diode) output power confirmation
4. Focus lock and spindle lock confirmation
5. Grating adjustment
6. Tracking balance adjustment
7. Tangential adjustment
8. Focus gain adjustment
9. Tracking gain adjustment
10. VCO free-run frequency adjustment
11. Method to confirm S character
    (FOCUS ERROR)

• Measuring Equipment

1. Dual trace oscilloscope
2. Laser power meter
3. Test disc (YEDS7)
4. Tracking balance adjustment filter
5. Loop gain adjustment filter
6. Signal generator
7. Frequency counter
8. Other general tools

• Test Mode

Test Mode setting and cancellation procedures

(1) To set the Test Mode, turn the POWER switch of the player (S401) ON pushing the TEST MODE SWITCH (S1).

(2) To canacel the Test Mode, simply turn the POWER switch of the player OFF.

The various key functions in the Test Mode are listed in Table 9-1.

• Adjusting Points

VR1: Laser power
VR7: Tracking offset (TRK.OFS)
VR3: Focus gain (FCS.GAN)
VR4: Tracking gain (TRK.GAN)
VR5: Tracking balance (TRK.BAL)
VR6: Focus offset (FCS.OFS)
VR8: VCO adjustment (VCO.ADJ)
VR2: RF offset (RF.OFS)

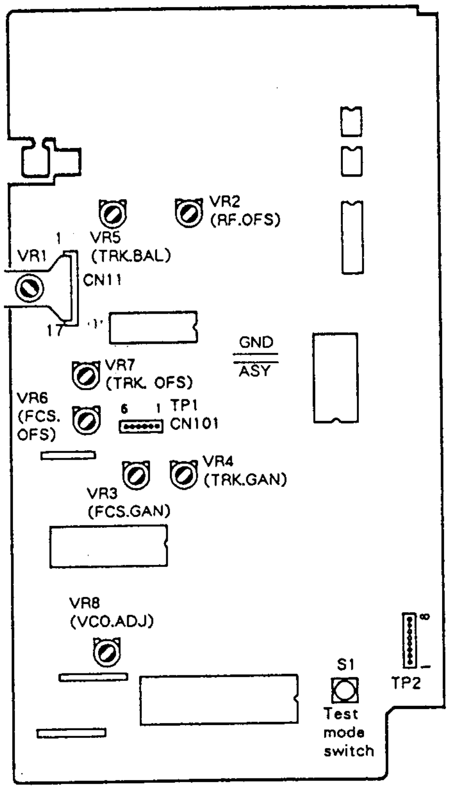
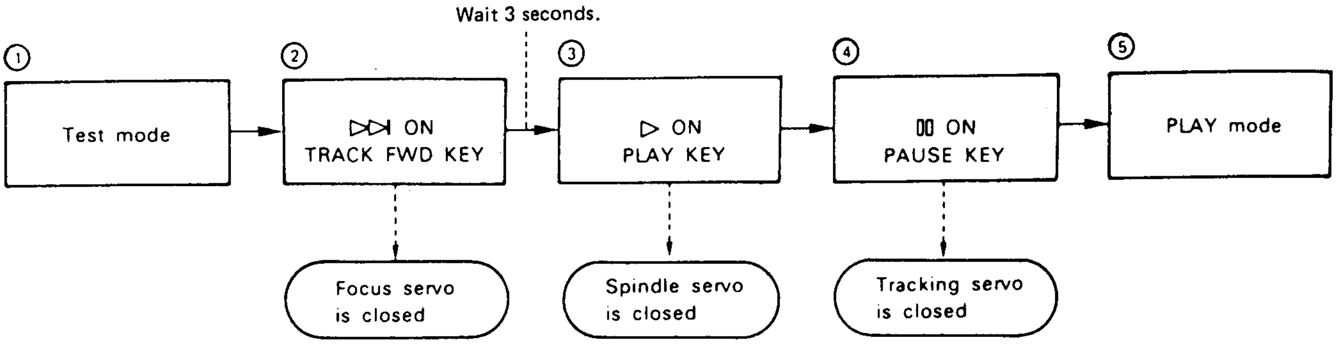


Fig. 9-1 Adjusting point

In the Test Mode, each servo circuit can be closed and opened by separate operations. Consequently, each servo must be closed one at a time (in serial sequence) to set PLAY mode.
Note that PLAY mode is not activated by simply pressing the PAUSE key (▯▯) in the Test Mode.

Example: Switching from STOP to PLAY mode.

- The each servo mechanisms operate in a serial sequence in the Test Mode.

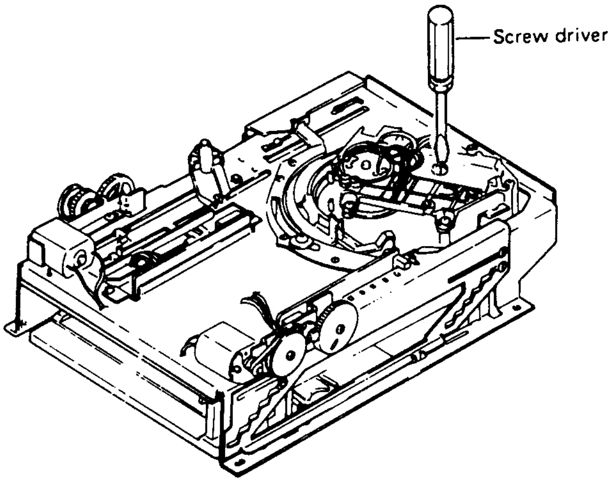
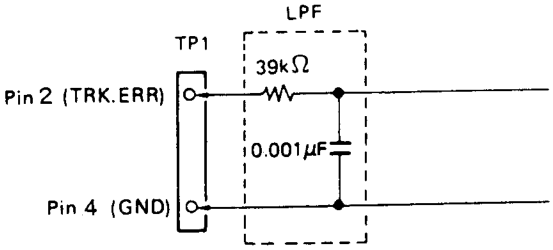


• Key Functions in Test Mode

Symbol	Key name	Function during test mode	Description
▷▷|	TRACK FWD	Focus servo is closed.	Laser diode lights up. Actuator is moved up/down, then focus servo is closed.
▷	PLAY	Spindle servo is closed.	Spindle starts to rotate and the servo is closed when it turns into the CLV-A servo mode.
▯▯	PAUSE	Tracking servo is closed/opened.	Performs toggle operation. Closing the tracking servo and becomes PLAY mode by depressing the key (Focus servo and spindle servo must be closing), and PAUSE indicator lights up. Tracking servo opens by depressing the key again.
◁◁	MANUAL SEARCH REV	Carriage moves in reverse direction. (towards disc center)	Carriage is moved towards disc center at a fast speed of about 3 cm/sec. Since there is no safety mechanism to stop the carriage, release the key when the carriage reaches the end.
▷▷	MANUAL SEARCH FWD	Carriage moves in forward direction. (towards disc end)	Carriage is moved towards disc end at a fast speed of about 3 cm/sec. Since there is no safety mechanism to stop the carriage, release the key when the carriage reaches the end.
□	STOP	STOP	All servos are opened.
⏏	EJECT	(CD Magazine) EJECT	CD Magazine is ejected. However, pickup does not return to the park position. Moreover, even when disc is closed the pickup remains as is.

Table 9-1

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
1	TRACKING OFFSET, FOCUS OFFSET AND RF OFFSET ADJUSTMENT					
				VR5 (TRK.BAL)	45°	• Set to TEST mode. (See page 33.) • Turn VR5 TRK.BAL (Tracking balance) volume clockwise 45° from the center.
			TP1 PIN 2 (TRK.ERR)	VR7 (TRK.OFS)	0V±50 mV	• Adjust with VR7 TRK OFS (Tracking offset) volume so that the voltage of pin 2 TRK.ERR (Tracking error) of TP1 becomes 0V±50 mV.
			TP1 PIN 6 (FCS.ERR)	VR6 (FCS.OFS)	FOCUS offset 0V±50 mV	• Adjust VR6 FCS.OFS (focus offset) so that the FCS.ERR (focus error) voltage at TP1 pin 6 becomes 0V±50 mV.
			TP1 PIN 1 (RF OUTPUT)	VR2 (RF.OFS)	RF offset 100 mV±50 mV	• Adjust VR2 RF.OFS (RF offset) so that the RF output voltage at TP1 PIN 1 becomes 100 mV±50 mV.
2	RF LEVEL ADJUSTMENT					
			TP1 Pin 1 (RF)	VR1 Laser power	$1.5\text{Vp-p}^{+0.2}_{-0}$ V	• Set to TEST mode. (See page 33.) • Play TEST disc and connect probe of an oscilloscope to pin 1 RF (RF output) of TP1 and measure the P-P voltage of RF waveform. • Adjust VR1 (Laser power) so that the value is within $1.5\text{Vp-p}^{+0.2}_{-0}$ V.
3	LD (LASER DIODE) OUTPUT POWER CONFIRMATION					
					Confirmation: less than 0.13 mW	• Set to TEST mode. (See page 33.) • Press TRACK FWD key (▷▷|) and turn ON LD (laser diode). • Place sensor of the laser power meter immediately above the object lens and confirm that the output power of the LD is less than 0.13 mW.
4	FOCUS LOCK AND SPINDLE LOCK CONFIRMATION					
	0.5V/div	100 msec/div	TP1 Pin 1 (RF output)		RF output exists Normal rotation	• Set TEST disc. • Set to TEST mode. (See page 33.) • Shift the pickup close to the center of the disc by pressing the MANUAL SEARCH FWD key (▷▷). * Note that this step must be performed. • Observe pin 1 RF (RF output) of TP1 with an oscilloscope and confirm that the RF signal is output after pressing the TRACK FWD key (▷▷|). • Press PLAY key (▷) and be sure that the disc rotates in normal direction at almost the specified speed (as it is close to the center of the disc, the rotating speed is around 30 rpm) and not rotates abnormally or inversely.

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
5	**GRATING ADJUSTMENT**					
	 Fig. 9-2  LPF TP1 39kΩ Pin 2 (TRK.ERR) 0.001μF Pin 4 (GND) Fig. 9-3					• Set to TEST mode. (See page 33.) • Shift the pickup close to the center of the disc by pressing MANUAL SEARCH FWD key (▷▷) so that the grating adjustment screw of the pickup can be seen through the oval hole of the upper side of the servo mechanism. • Insert the (–) screwdriver into the adjusting hole from the upper side of the mechanism as shown in Fig. 9-2, and confirm that the grating screw turns. • Press TRACK FWD key (▷▷I) and PLAY key (▷) sequentially and close the focus servo and spindle servo. (Do not close the tracking servo.) • Observe the waveform of pin 2 TRK.ERR (Tracking error) of TP1 with an oscilloscope. At this point, insert a 4 kHz cutoff low-pass filter. (Fig. 9-3)
	0.5V/div	5 ms/div	TP1 Pin 2 TRK.ERR	Grating Grating	Null point Maximum amplitude	• Turn the (–) screwdriver and find null point. (Photo. 9-1) • Then, turn slowly the (–) screwdriver **counterclockwise** from the null point and adjust at the point where the waveform (Tracking error signal) firstly becomes maximum amplitude. (See Photo. 9-3.) Note: If the (–) screwdriver is pressed strongly, the pickup moves toward disc center, accordingly adjustment becomes difficult. • Finally, be sure to confirm that the tracking error signal (at this time, 4 kHz of cutoff low-pass filter is not inserted) when the pickup is moved toward the disc center and the P-P voltage of the tracking error signal at the outer circumference of the disc are not varied greatly. When the level is deviated over ±10%, adjust again by turning grating screw to the maximum error amplitude point.

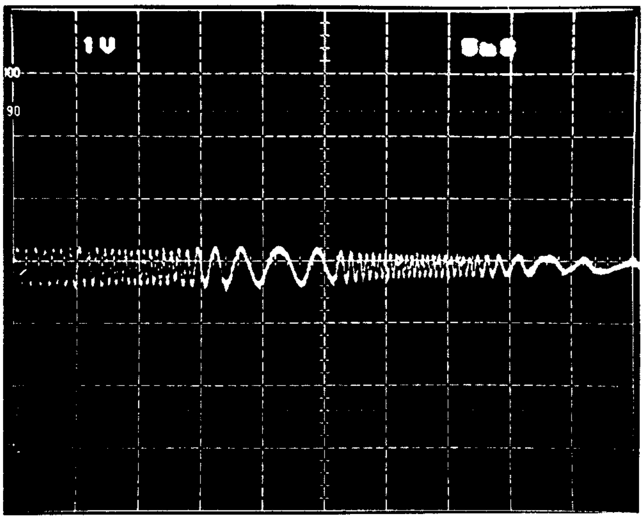


Photo. 9-1 Null point

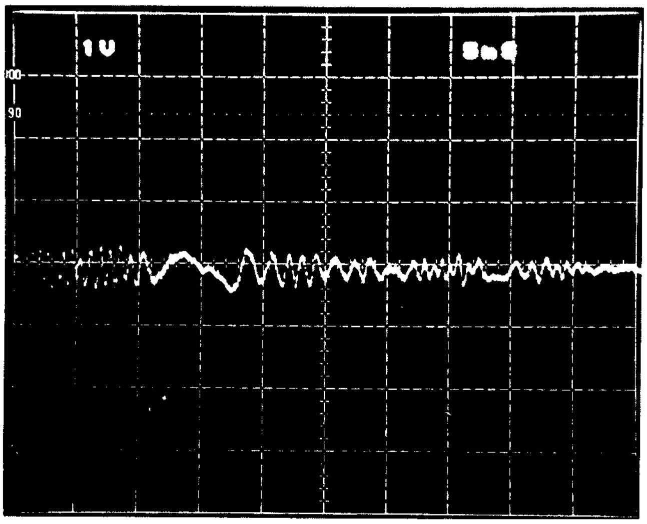


Photo. 9-2 Waveform of not null point

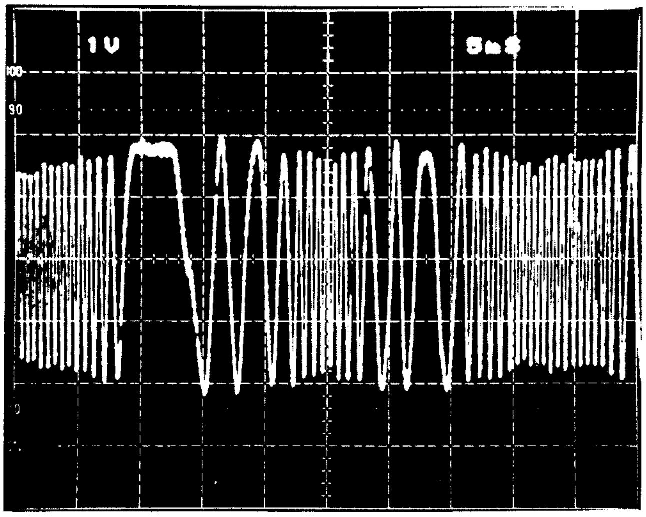


Photo. 9-3 Maximum amplitude

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
6	**TRACKING BALANCE ADJUSTMENT**					
	0.5V/div	5 msec /div	TP1 Pin 2 (TRK.ERR)	VR5 (TRK.BAL)	(TRK.ERR)	• Set the TEST disc. • Set to TEST mode. (See page 33.) • Shift the carriage close to the center of the disc by pressing MANUAL SEARCH FWD key (▷▷). • Press TRACK FWD key (▷▷|), and PLAY key (▷) to start turning the disc. • Observe pin 2 TRK.ERR (Tracking error) of TP1 with an oscilloscope and adjust with VR5 TRK.BAL (Tracking balance) volume so that the DC component of the tracking error disappears. Note: Before proceeding with the above adjustments, be sure to adjust the tracking error offset.

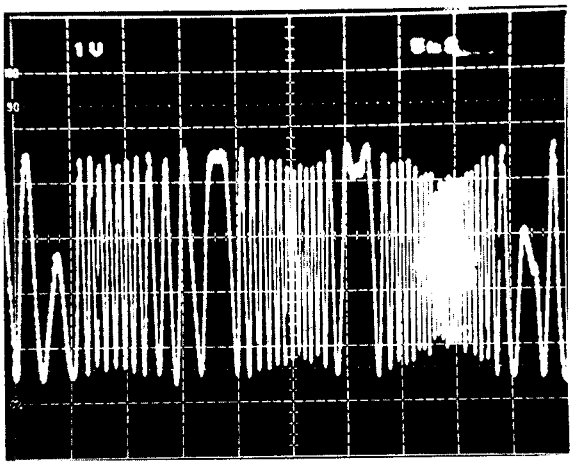


Photo. 9-4 DC component exists

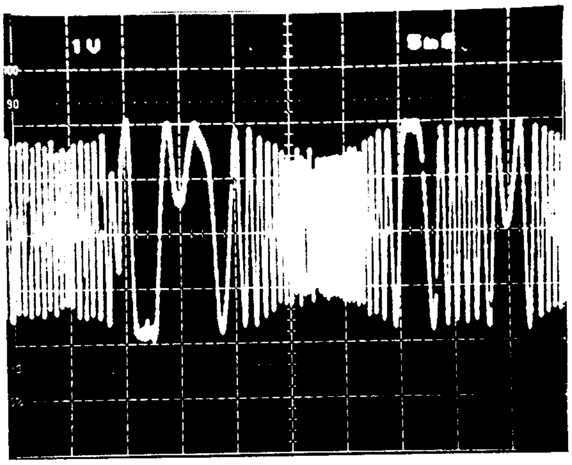
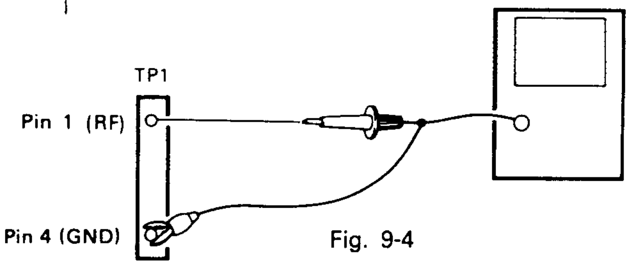
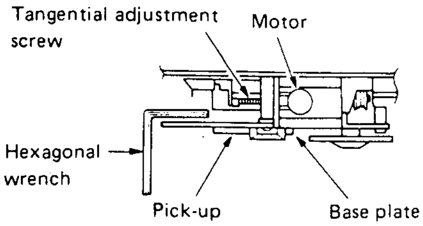


Photo. 9-5 DC component not exist

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
7	**TANGENTIAL ADJUSTMENT**					
		200nS	TP1 Pin 1 (RF output)	Tangential adjustment screw	Best eye pattern	• Set the TEST disc. • Set to TEST mode. (See page 33.) • Shift the pickup close to the center of the disc by pressing MANUAL SEARCH FWD key (▷▷). • Press TRACK FWD key (▷▷|), PLAY key (▷) and PAUSE key (▯▯) sequentially, and close all the servos. (Pause indicator lights up.) • Observe pin 1 RF (RF output) of TP1 with an oscilloscope and adjust with the tangential screw so that the eye pattern becomes clear. (Fig. 9-4) • The adjusting point is the middle point between the point where the eye pattern becomes deteriorate by turning the tangential screw clockwise and the point where the eye pattern becomes deteriorate by turning the tangential screw counterclockwise. As a criterion, observe that the overall waveform is clear and one of the diamond shapes within the eye pattern (Photo. 9-6), and adjust at as an optimum point where the diamond shape is seen relatively fine line.  Fig. 9-4 Note: During the adjustment, hold hexagonal wrench to upward so as to keep the pickup body not goes down.


Tangential adjustment screw
Motor
Hexagonal wrench
Pick-up
Base plate

In the figure below, the top and bottom is opposite to that of the actual product.

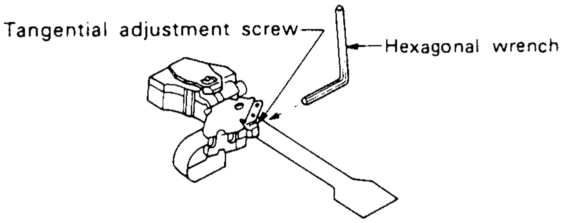

Tangential adjustment screw
Hexagonal wrench

Fig. 9-5 Tangential adjustment

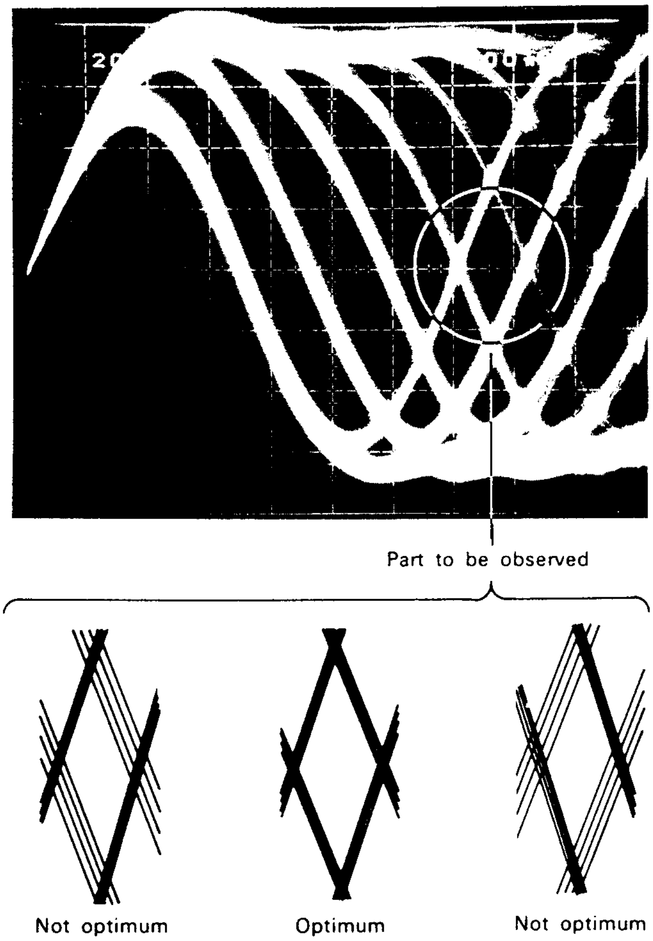


Photo. 9-6

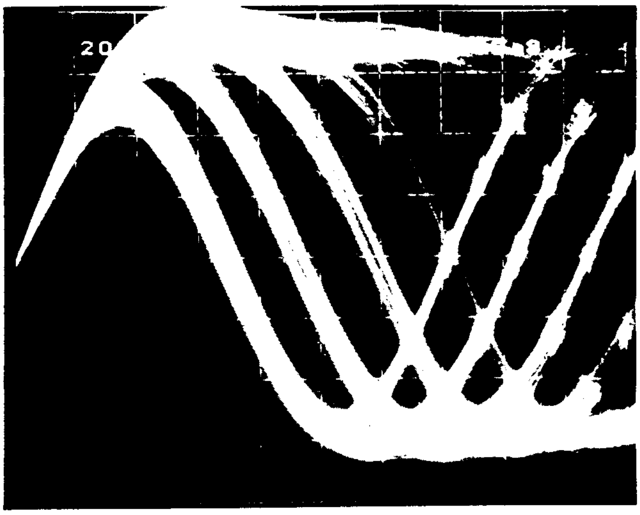


Photo. 9-7

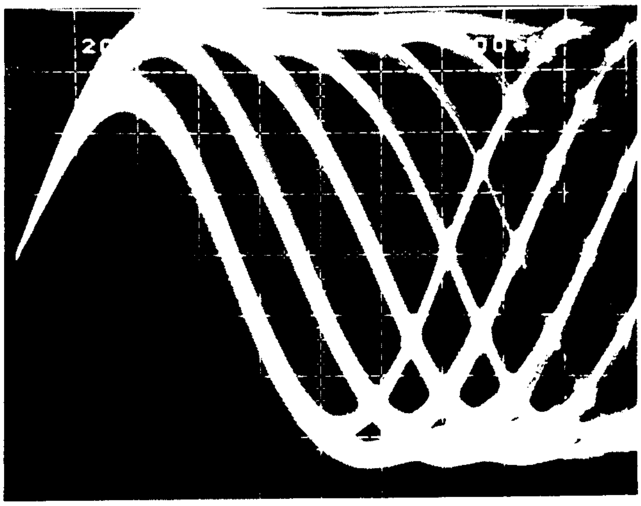


Photo. 9-8

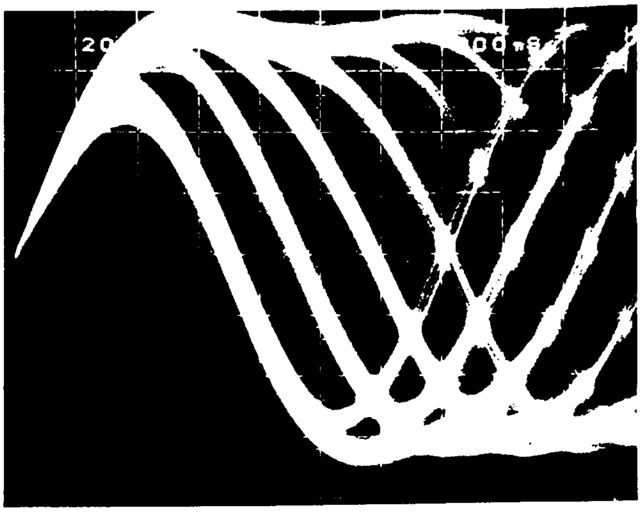
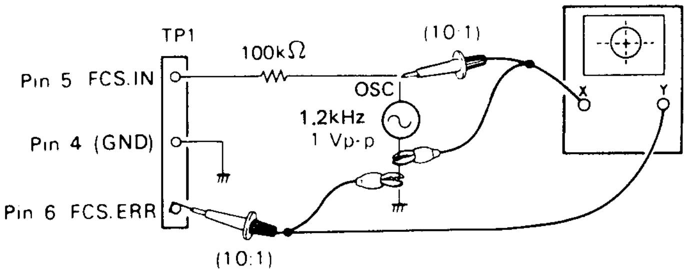


Photo. 9-9

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
8	**FOCUS GAIN ADJUSTMENT**					
						• In the POWER OFF state, connect an oscilloscope and oscillator as shown in Fig. 9-6. • Set to PLAY mode. • Turn the POWER of oscillator ON and output 1.2kHz 1 Vp-p. Note: (Depending upon oscillators, some of them output DC when their power turned ON. Therefore, it is desirable to connect oscillator after turning the power ON.)
	20mV/div.5/mV/div. CH1 (X), CH2 (Y) (Probe 10 : 1)		X axis TP1 Pin 5 (FCS.IN) Y axis TP1 Pin 6 (FCS.ERR)	VR3 (FCS.GAN)	Phase difference 90°	• Adjust with VR3 FCS.GAN (Focus gain) volume so that the lissajous figure of the oscilloscope becomes horizontal circle (Phase difference 90°).  TP1 Pin 5 FCS.IN Pin 4 (GND) Pin 6 FCS.ERR 100kΩ (10:1) OSC 1.2kHz 1 Vp-p X Y (10:1) Fig. 9-6

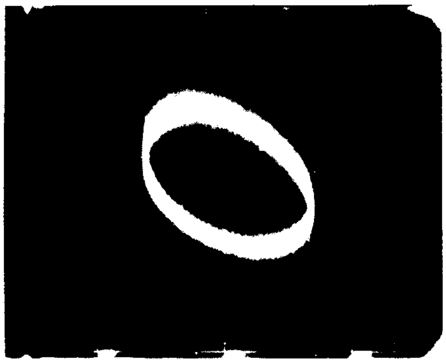


Photo. 9-10 High gain

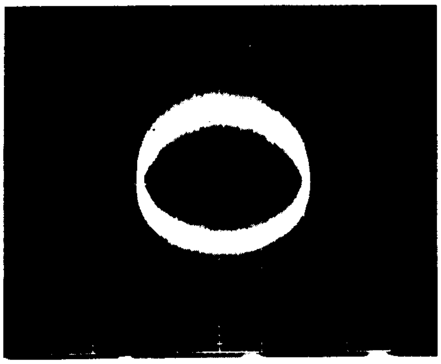


Photo. 9-11 Optimum gain

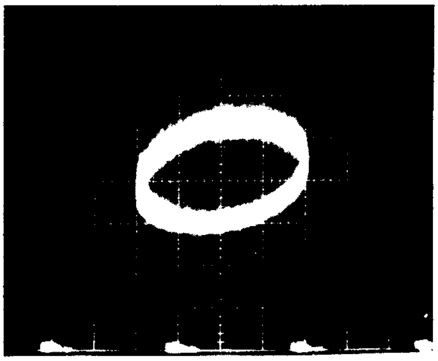


Photo. 9-12 Low gain

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
9	**TRACKING GAIN ADJUSTMENT**					
						• In the POWER OFF state, connect an oscilloscope and oscillator as shown in Fig. 9-7. • Set to PLAY mode. • Turn the POWER of oscillator ON and output 1.2 kHz 2 Vp-p. Note: (Depending upon oscillators, some of them output DC when their power turned ON. Therefore, it is desirable to connect oscillator after turning the power ON.)
	50 mV/div.5mV/div. CH1 (X), CH2 (Y) (Probe 10 : 1)		X axis TP1 Pin 3 (TRK.IN) Y axis TP1 Pin 2 (TRK.ERR)	VR4 (TRK.GAN)	Phase difference 90°	• Adjust with VR4 TRK GAN (Tracking gain) volume so that the lissajous figure of the oscilloscope becomes horizontal circle (phase difference 90°).

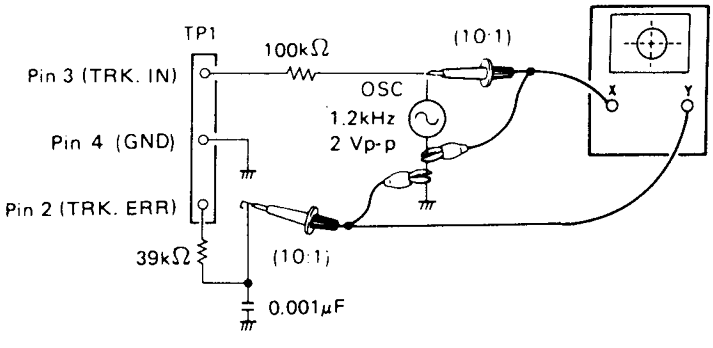


Fig. 9-7

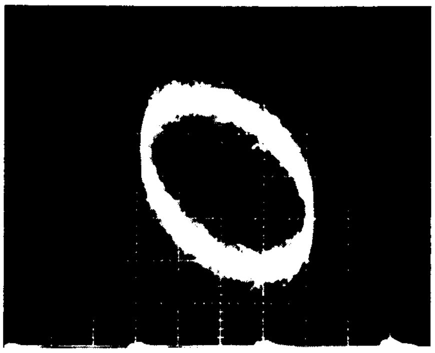


Photo. 9-13 High gain

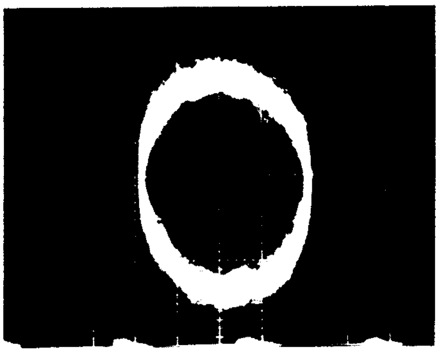


Photo. 9-14 Optimum gain

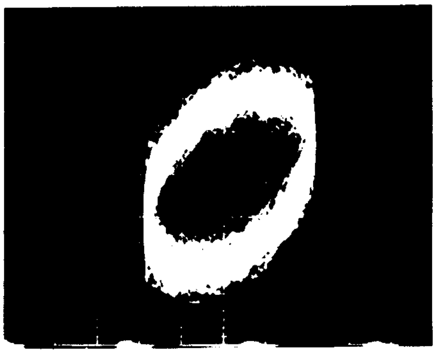


Photo. 9-15 Low gain

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
10	**VCO FREE RUN FREQUENCY ADJUSTMENT**					
			TP2 Pin 2	VR8 (VCO.ADJ)	4.275 ±0.025 MHz	• Set to TEST mode. (See page 33.) • Short-circuit between ASY and GND jumper with grating driver, etc. (Fig. 9-1) • Connect frequency counter, which is measurable over 10 MHz, to pin 2 of TP2. • Adjust with VR8.VCO ADJ (VCO adjustment) volume so that the value of frequency counter becomes 4.275±0.025 MHz.
11	**METHOD TO CONFIRM S CHARACTER (FOCUS ERROR)**					
						• Set to TEST mode. (See page 33.) • Short-circuit between pin 5 FCS. IN (Focus in) of TP1 and GND. • Press TRACK FWD key (▷▷|) and observe the waveform of pin 6 FCS.ERR (Focus error) of TP1 at that time with an oscilloscope.

9. RÉGLAGE

Les réglages pour ce modèle doivent être réalisés dans l'ordre indiqué ci-dessous.

• Réglages et vérifications à effectuer

1. Réglages de l'offset de centrage de piste, de l'offset de focalisation et de l'offset RF.
2. Réglage du niveau RF
3. Vérification de la puissance de sortie de la diode laser (LD)
4. Vérification du verrouillage de focalisation et du verrouillage de moyeu
5. Réglage du réseau
6. Réglage de l'équilibrage de centrage de piste
7. Réglage tangentiel
8. Réglage du gain de focalisation
9. Réglage du gain de centrage de piste
10. Réglage de la fréquence propre du VCO
11. Méthode de contrôle de la caractéristique S (erreur de focalisation)

• Matériel de mesure

1. Oscilloscope double trace
2. Appareil de mesure pour puissance laser
3. Disque d'essai (YEDS7)
4. Filtre de réglage pour équilibrage de centrage de piste
5. Filtre de réglage pour gain de boucle
6. Générateur de signal
7. Fréquencemètre
8. Outillage général divers

• Mode d'essai

Méthodes de réglage et d'annulation du mode d'essai

(1) Pour régler le mode d'essai, placer l'interrupteur d'alimentation (POWER) du lecteur (S401) sur la position de marche (ON) en appuyant sur l'interrupteur de mode d'essai (TEST MODE SWITCH) (S1).

(2) Pour annuler le mode d'essai, amener simplement l'interrupteur d'alimentation (POWER) du lecteur sur la position d'arrêt (OFF).

Les différentes fonctions des touches dans le mode d'essai sont indiquées dans le tableau 9-1.

• Points de réglage

VR1: Puissance laser
VR7: Décalage de centrage de piste (TRK.OFS)
VR3: Gain de focalisation (FCS.GAN)
VR4: Gain de centrage de piste (TRK.GAN)
VR5: Equilibrage de centrage de piste (TRK.BAL)
VR6: Décalage de focalisation (FCS.OFS)
VR8: Réglage du VCO (VCO.ADJ)
VR2: Offset RF (RF.OFS)

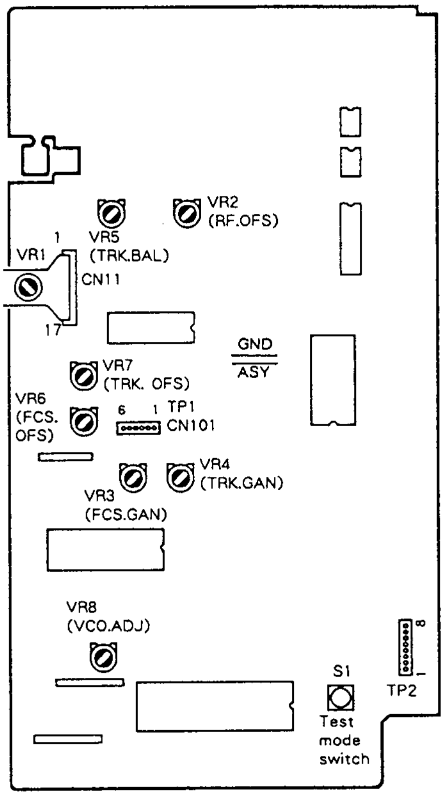


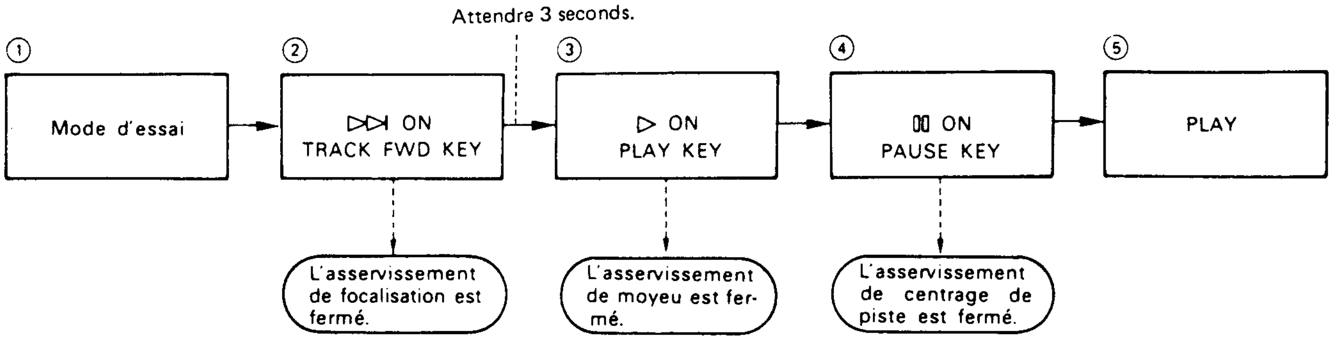
Fig. 9-1 Point de réglage

Dans le mode d'essai (Test Mode), chaque circuit asservi peut être fermé ou ouvert au moyen d'opérations séparées. En conséquence, les asservissements doivent être fermés l'un après l'autre (séquentiellement) pour régler le mode de lecture (PLAY).

Note: Le mode de lecture (PLAY) n'est pas simplement mis en oeuvre par l'enfoncement de la touche PAUSE (⏸) dans le mode d'essai.

Exemple: Commutation du mode d'arrêt (STOP) au mode de lecture (PLAY).

* Dans le mode d'essai (Test Mode), chaque servo-mécanisme agit séquentiellement.

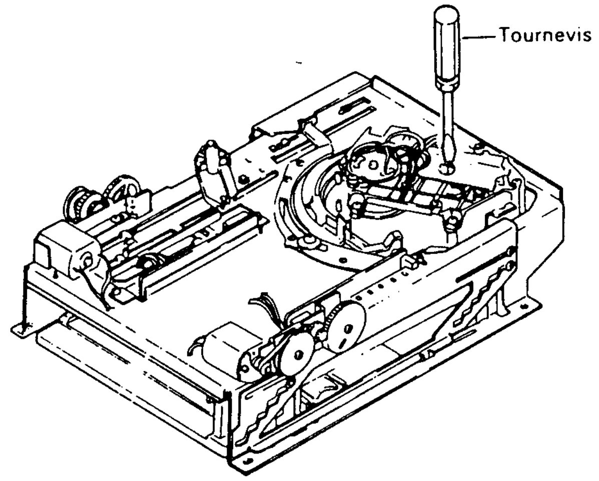
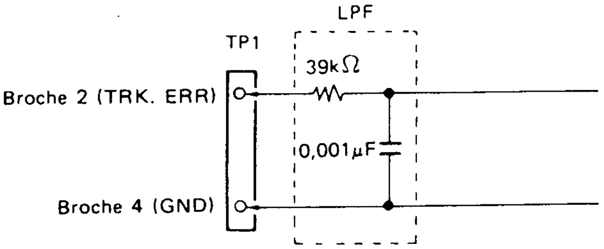

Attendre 3 seconds.
①
Mode d'essai
②
▷▷| ON
TRACK FWD KEY
L'asservissement de focalisation est fermé.
③
▷ ON
PLAY KEY
L'asservissement de moyeu est fermé.
④
⏸ ON
PAUSE KEY
L'asservissement de centrage de piste est fermé.
⑤
PLAY

• Fonction des touches dans le mode d'essai (Test Mode)

Symbole	Désignation de touche	Fonction pendant le mode d'essai	Description
▷▷|	TRACK FWD	Asservissement de focalisation fermé	La diode laser s'allume. Le moteur d'asservissement se déplace vers le haut/bas, puis l'asservissement de focalisation est fermé.
▷	PLAY	Asservissement de moyeu fermé	Le moyeu commence à tourner et l'asservissement est fermé lorsqu'il passe dans le mode CLV-A.
⏸	PAUSE	Asservissement de centrage de piste ouvert/fermé	Réalise l'opération de bascule. Fermeture de l'asservissement de centrage de piste et passage en mode de lecture (PLAY) en appuyant sur la touche (l'asservissement de focalisation et l'asservissement de moyeu doivent se fermer); le voyant de PAUSE s'allume. L'asservissement de centrage de piste s'ouvre par une nouvelle pression sur la touche.
◁◁	MANUAL SEARCH REV	Le chariot se déplace en arrière (vers le centre du disque).	Le chariot se déplace vers le centre du disque à une vitesse élevée d'environ 3 cm/s. Comme il n'y a pas de dispositif de sécurité, relâcher la touche dès que le chariot arrive en fin de course.
▷▷	MANUAL SEARCH FWD	Le chariot se déplace en avant (vers le centre du disque).	Le chariot se déplace vers la fin du disque à la vitesse élevée d'environ 3 cm/s. Comme il n'y a pas de dispositif de sécurité, relâcher la touche dès que le chariot arrive en fin de course.
□	STOP	Arrêt	Tous les asservissements sont ouverts
⏏	EJECT	Ejection du magasin de clisque compact	Le magasin du disque compact est éjecté. Néanmois, la tête de lecture ne revient pas sur sa position de repos. De plus, même lorsque le disque est enfermé, la tête de lecture demeure tel quel.

Tableau 9-1

Pas No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
	V	H				
1.	**REGLAGES DE L'OFFSET DE CENTRAGE DE PISTE, DE L'OFFSET DE FOCALISATION ET DE L'OFFSET RF**					
				VR5 (TRK.BAL)	45°	• Régler le mode d'essai (TEST). (Voir page 44) • Tourner le potentiomètre VR5 TRK.BAL (équilibrage de centrage de piste) de 45° depuis le centre dans le sens des aiguilles d'une montre.
			TP1 broche 2 (TRK.ERR)	VR7 (TRK.OFS)	0V±50 mV	• Ajuster le potentiomètre VR7 TRK.OFS (décalage de centrage de piste) de façon à ce que la tension à la broche 2 TRK.ERR (erreur de centrage de piste) de TP1 devienne égale à 0V±50 mV.
			TP1 BROCHE 6 (FCS.ERR)	VR6 (FCS.OFS)	Offset de focalisation 0V±50 mV	• Régler VR6 FCS.OFS (offset de focalisation) de manière à ce que la tension de FCS.ERR (erreur de focalisation) relevée sur la broche 6 de TP1 soit de 0V±50 mV.
			TP1 BROCHE 1 (RF OUTPUT)	VR2 (RF.OFS)	Offset RF 100 mV±50 mV	• Régler VR2 RF.OFS (offset HF) de manière à ce que la tension de RF OUTPUT (sortie HF) relevée sur la broche 1 de TP1 soit de 100 mV±50 mV.
2.	**REGLAGE DU NIVEAU RF**					
			TP1 Broche 1 (RF)	VR1 Puissance laser	$1.5Vp\text{-}p^{+0.2}_{-0}V$	• Régler le mode d'essai (TEST). (Voir page 44) • Reproduire le disque d'essai (TEST) et raccorder la sonde d'un oscilloscope à la broche 1 RF (sortie RF) de TP1 et mesurer la tension C-C de la forme d'onde RF. • Régler la puissance laser de facon que la tension soit de $1.5Vp\text{-}p^{+0.2}_{-0}V$.
3.	**CONTRÔLE DE LA PUISSANCE DE SORTIE DE LA DIODE LASER (LD)**					
					Confirmation: moins de 0,13 mW	• Régler le mode d'essai (TEST). (Voir page 44) • Appuyer sur la touche de centrage de piste arrière (TRACK FWD) (▷▷|) et enclencher la diode laser (LD). • Placer la capteur de l'instrument destiné à mesurer la puissance laser au dessus de l'objectif et vérifier que la puissance de sortie de la diode laser (LD) est inférieure à 0,13 mW.
4.	**CONTRÔLE DU VERROUILLAGE DE FOCALISATION ET DU VERROUILLAGE DE MOYEU**					
	0.5 V/div.	100 ms/div.	TP1 broche 1 (sortie RF)		Présence de sortie RF Rotation normale	• Mettre en place le disque d'essai (TEST). • Régler le mode d'essai (TEST). (Voir page 44) • Déplacer la tête de lecture à proximité du centre du disque en appuyant sur la touche de recherche [MANUAL SEARCH FWD (▷▷)]. • Cette étape doit absolument être réalisée. • Observer le signal RF à la broche 1 de TP1 (sortie RF) au moyen d'un oscilloscope et vérifier que le signal RF sorte après l'enfoncement de la touche d'avance de piste TRACK FWD (▷▷|). • Appuyer sur la touche de lecture (PLAY) (▷) et s'assurer que le disque tourne en sens normal avec approximativement la vitesse spécifiée (étant près du centre du disque, la vitesse de rotation est d'environ 30 tr/mn), sans anomalie ni inversion du sens de rotation.

Pas No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
	V	H				
5.	**RÉGLAGE DE LA MIRE**					
	 Fig. 9-2  LPF TP1 39kΩ Broche 2 (TRK. ERR) 0,001μF Broche 4 (GND) Fig. 9-3					• Régler le mode d'essai (TEST). (Voir page 44) • Amener la tête de lecture à proximité du centre du disque en appuyant sur la touche de recherche manuelle avant (MANUAL SEARCH FWD) (▷▷), de façon à ce que la vis de réglage du réseau de la tête de lecture puisse être vue à travers le trou oval situé à la partie supérieure de l'asservissement. • Introduire le tournevis (—) dans le trou de réglage depuis la partie supérieure du mécanisme, comme illustré à la figure 9-2, puis vérifier que la vis de réseau tourne. • Appuyer séquentiellement sur les touches de piste avant TRACK FWD (▷▷|) et de lecture (PLAY) (▷), et fermer les asservissements de focalisation et de moyeu. (Ne pas fermer l'asservissement de centrage de piste.) • Observer la forme d'onde à la broche 2 TRK.ERR (erreur de centrage de piste) de TP1 au moyen d'un oscilloscope. Introduire alors un filtre de coupure passe-bas 4 kHz. (Figure 9-3)
	0,5 V/div.	5 ms/div.	TP1 Broche 2 TRK.ERR	Réseau Réseau	Point zéro Amplitude maximum	• Faire touner un le tournevis (—) et rechercher le point zéro. (Photo 9-1) • Tourner ensuite lentement dans **le sens contraire des aiguilles d'une montre** le tournevis (—) depuis le point zéro et l'ajuster sur le point où la forme d'onde (signal d'erreur de centrage de piste) présente une première amplitude maximum. (Voir photo 9-3.) Note: Si le tournevis (—) est appuyé avec force, la tête de lecture se déplace vers le centre du disque et le léglage devient difficile à effectuer. • Finalement, s'assurer que le signal d'erreur de centrage de piste (cette fois-ci le filtre de coupure passe-bas à 4 kHz n'est pas introduit) n'a pas beaucoup varié lorsque la tête de lecture est déplacée vers le centre du disque, et aussi que la tension C-C du signal de centrage de piste n'a pas non plus beaucoup varié sur la circonférence extérieure du disque. Lorsque le niveau varie de plus de ±10%, recommencer le réglage en tournant la vis de réseau jusqu'au point d'amplitude d'erreur maximum.

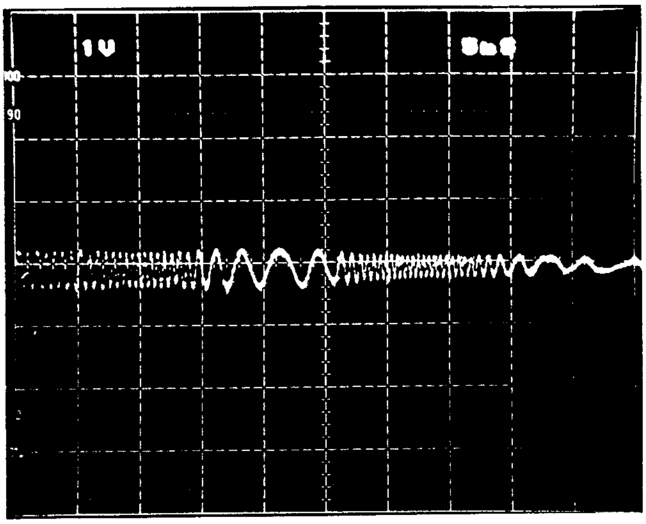


Photo. 9-1 Point zéro

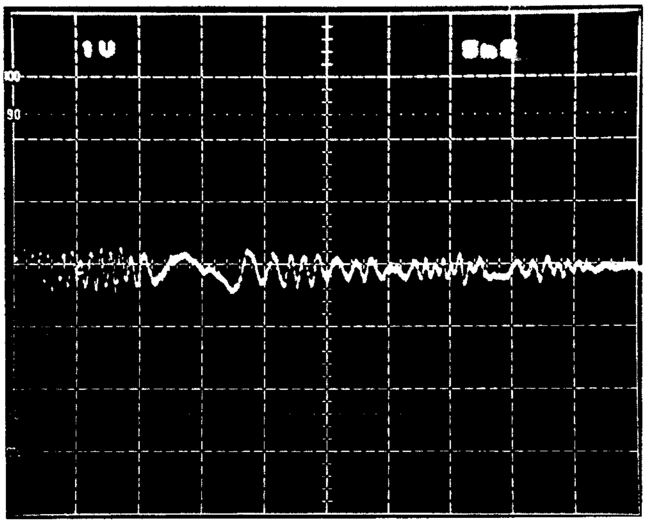


Photo. 9-2 Forme d'onde hors du point zéro

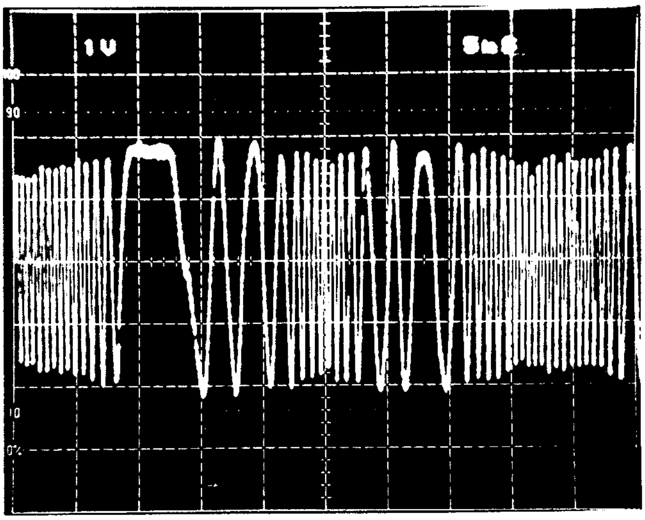


Photo. 9-3 Amplitude maximum

<table>
<tr><th rowspan="2">Pas No.</th><th colspan="2">Réglage de l'oscilloscope</th><th rowspan="2">Points d'essai</th><th rowspan="2">Points de réglage</th><th rowspan="2">Points de contrôle/ spécifications de réglage</th><th rowspan="2">Méthode de réglage</th></tr>
<tr><th>V</th><th>H</th></tr>
<tr><td>6.</td><td colspan="6">RÉGLAGE DE L'ÉQUILIBRAGE DE CENTRAGE DE PISTE</td></tr>
<tr><td></td><td>0,5 V/div.</td><td>5 ms/div.</td><td>TP1 Broche 2 (TRK.ERR)</td><td>VR5 (TRK.BAL)</td><td>TRK.ERR</td><td>• Mettre en place le disque d'essai (TEST).
• Régler le mode d'essai (TEST). (Voir page 44)
• Amener la tête de lecture à proximité du centre du disque en appuyant sur la touche de recherche manuelle avant (MANUAL SEARCH FWD) (▷▷).
• Appuyer sur la touche de piste avant (TRACK FWD) (▷▷|) et sur la touche de lecture (PLAY) (▷) pour faire tourner le disque.
• Observer la broche 2 TRK.ERR (erreur de centrage de piste) de TP1 au moyen d'un oscilloscope et ajuster au moyen du potentiomètre VR5 TRK.BAL (équilibrage de centrage de piste) de façon à ce que la composante continue de l'erreur de centrage de piste disparaisse.
Note: Avant de procéder aux ajustements ci-dessus, veiller à régler le décalage d'erreur de piste.</td></tr>
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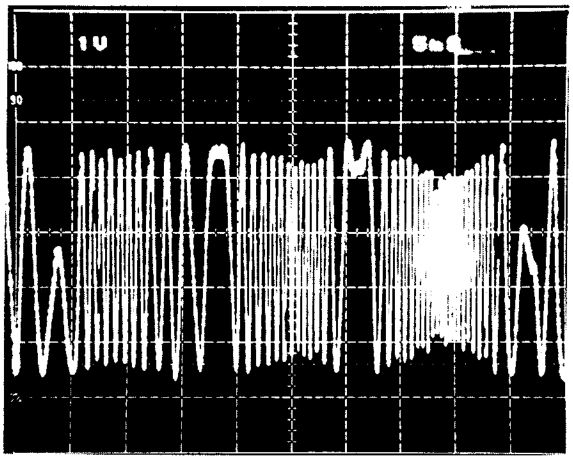


Photo. 9-4 Présence de la composante continue

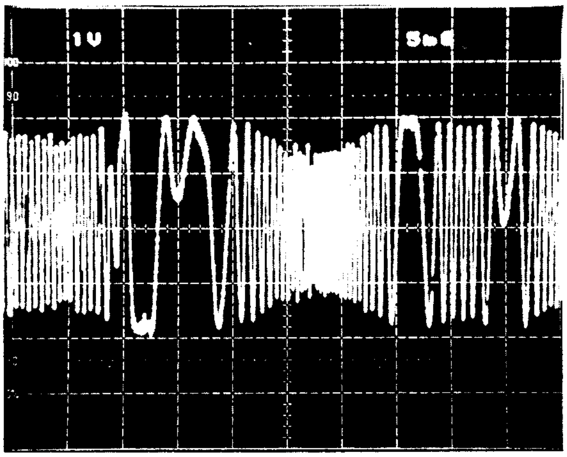
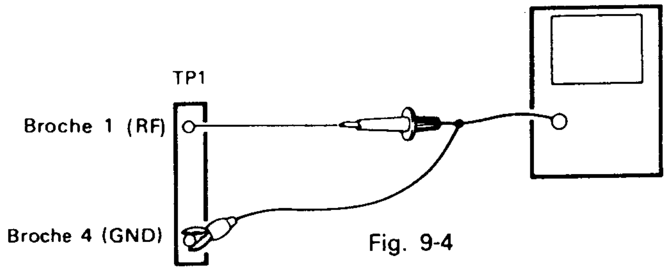
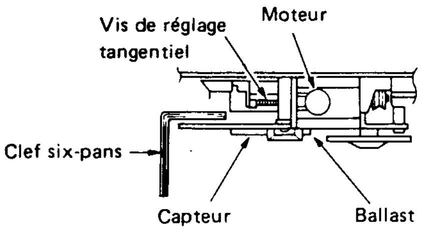


Photo. 9-5 Absence de la composante continue

Pas No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
	V	H				
7.	**RÉGLAGE TANGENTIEL**					
		200 ns	TP1 Broche 1 (sortie RF)	Vis de réglage tangentiel	Mire Best Eye	• Mettre en place le disque d'essai (TEST) • Régler le mode d'essai (TEST). (Voir page 44) • Amener la tête de lecture à proximité du centre du disque en appuyant sur la touche de recherche manuelle avant (MANUAL SEARCH FWD) (▷▷). • Appuyer séquentiellement sur les touches d'avance de piste (TRACK FWD) (▷▷|), de lecture (PLAY) (▷) et de pause (PAUSE) (❚❚), et fermer tous les asservissements. (Le voyant de pause s'allume.) • Observer le signal RF à la broche 1 (sortie RF) de TP1 au moyen d'un oscilloscope et régler au moyen de la vis tangentielle, de façon à ce que la mire Best Eye devienne claire. (Figure 9-4) • Le point de réglage se situe au milieu entre le point ou la mire se détériore en tournant la vis tangentielle dans le sens des aiguilles d'une montre et le point où la mire se détériore en tourant la vis tangentielle dans le sens inverse des aiguilles d'une montre. Comme critère, observer que la forme d'onde globale soit claire et que l'une des formes de losange se situe dans la mire (Photo 9-6); réaliser le réglage en un point optimum où la forme de losange apparaît avec des traits relativement fins.  Fig. 9-4 Note: Pendant le réglage, tenir la clef six-pans vers le haut de facon à ce que le corps de la tête de lecture ne descende pas.


Vis de réglage tangentiel
Moteur
Clef six-pans
Capteur
Ballast

Dans l'illustration ci-dessous, le dessus et le dessous de l'appareil sont en réalité à l'envers.

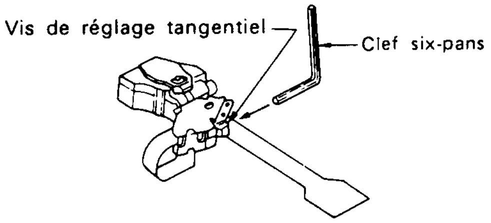

Vis de réglage tangentiel
Clef six-pans

Fig. 9-5 Réglage tangentiel

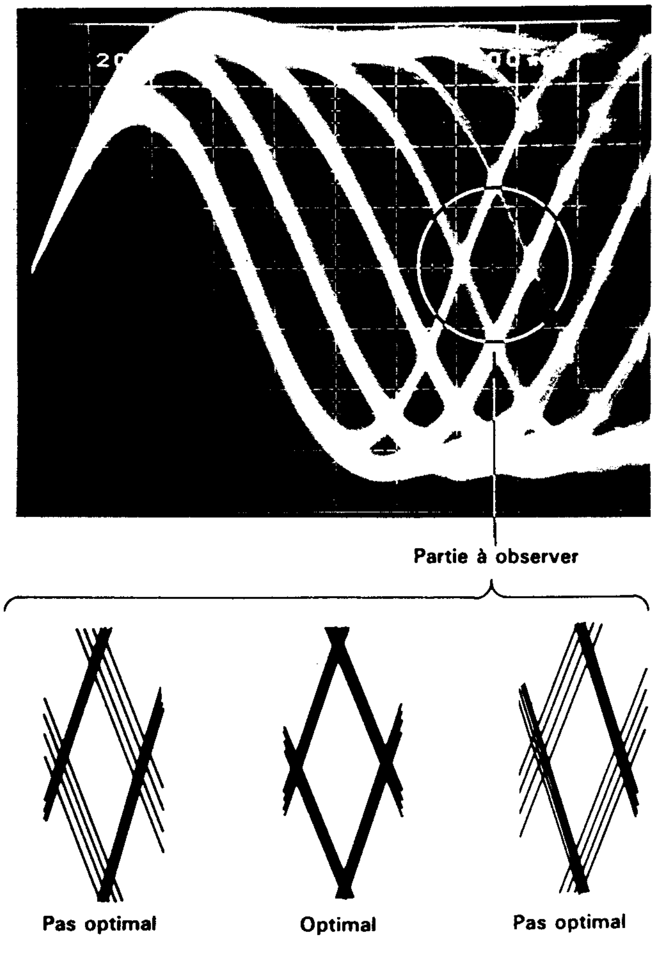


Photo. 9-6

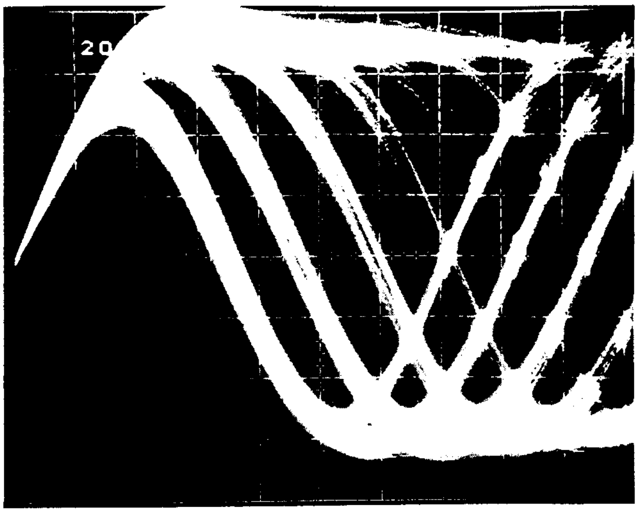


Photo. 9-7

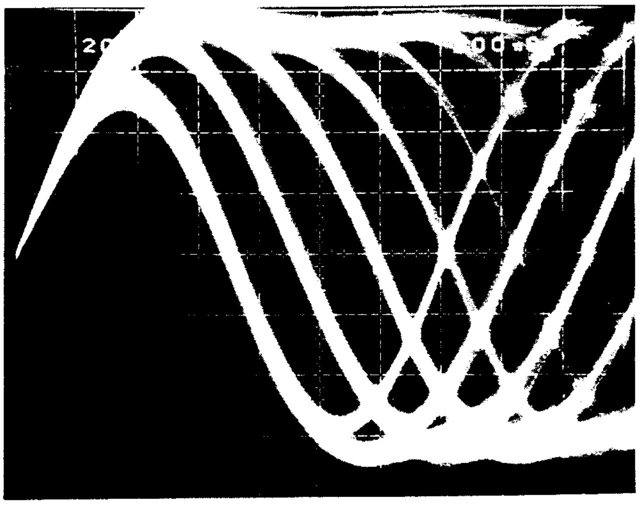


Photo. 9-8

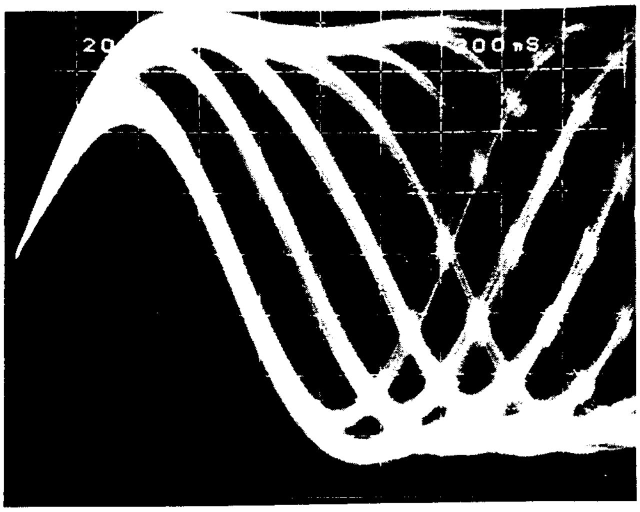
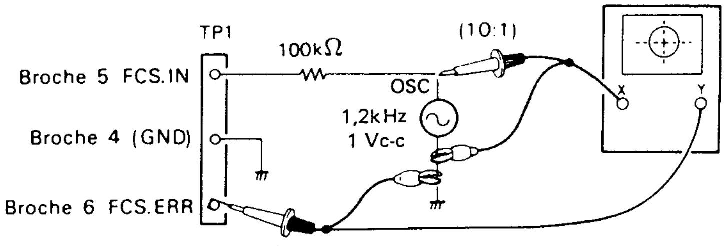


Photo. 9-9

Pas No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
	V	H				
8.	RÉGLAGE DU GAIN DE FOCALISATION					
						• L'alimentation étant coupée (POWER OFF), raccorder un oscilloscope et un oscillateur de la manière indiquée à la figure 9-6. • Régler le mode de lecture (PLAY). • Enclencher l'alimentation de l'oscillateur et délivrer un signal de 1,2kHz à 1 Vc-c. Note: (En fonction de l'oscillateur utilisé, certains appareils fournissent un courant continu lors de leur enclenchement. Par conséquent, il est préférable de raccorder l'oscillateur après avoir enclenché son alimentation.)
	20 mV/div. 5 mV/div. Canal 1(X), Canal 2(Y) (Sonde 10:1)		Axe X TP1 Broche 5 (FCS.IN) Axe Y TP1 Broche 6 (FCS.ERR)	VR3 (FCS.GAN)	Différence de phase 90°.	• Ajuster le potentiomètre VR3 FCS.GAN (gain de focalisation) de façon à ce que la figure de Lissajou observée sur l'oscilloscope devienne un cercle horizontal (déphasage 90°).  TP1 Broche 5 FCS.IN Broche 4 (GND) Broche 6 FCS.ERR 100kΩ OSC 1,2kHz 1 Vc-c (10:1) (10:1) X Y Fig. 9-6

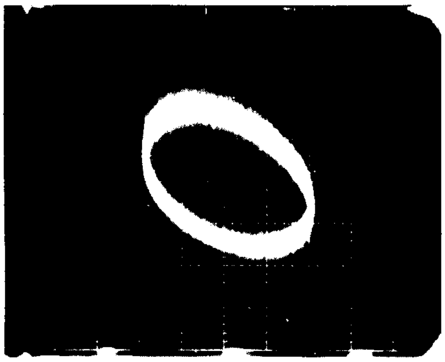


Photo. 9-10 Gain élevé

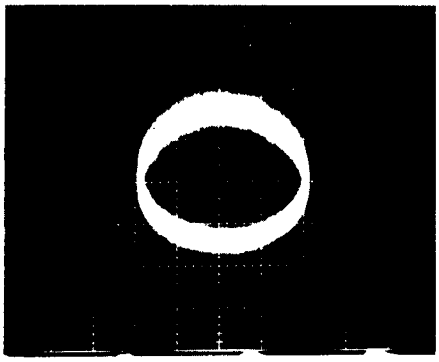


Photo. 9-11 Gain optimum

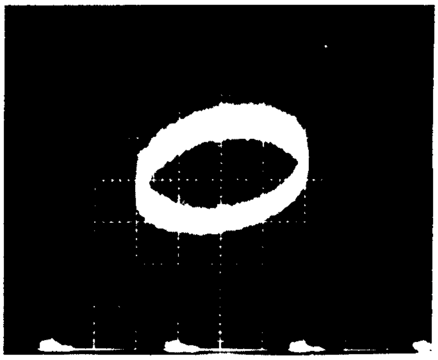
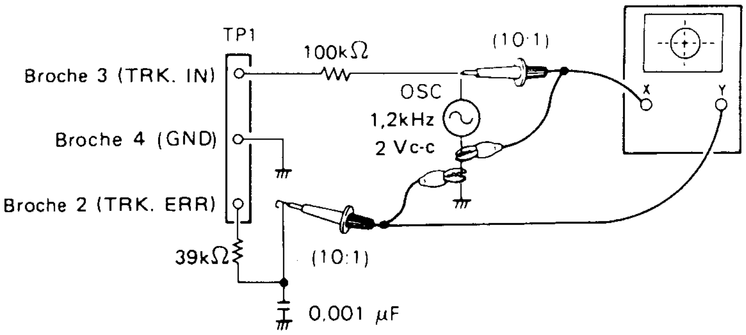


Photo. 9-12 Gain réduit

Pas No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
	V	H				
9.	RÉGLAGE DU GAIN DE CENTRAGE DE PISTE					
	50 mV/div. 5 mV/div. Canal 1 (X), Canal 2 (Y) (Sonde 10:1)		Axe X TP1 Broche 3 (TRK.IN) Axe Y TP1 Broche 2 (TRK.ERR)	VR4 (TRK.GAN)	Déphasage 90°	• L'alimentation étant coupée (POWER OFF), raccorder un oscilloscope et un oscillateur de la manière indiquée à la figure 9-7. • Régler le mode d'essai (TEST). (Voir page 44) • Appuyer séquentiellement sur les touches d'avance de piste (TRACK FWD) (▷▷|), de lecture (PLAY) (▷) et de pause (PAUSE) (❙❙), puis enclencher chaque asservissement de focalisation, moyeu et centrage de piste. Enclencher l'alimentation de l'oscillateur et fournir un signal de 1,2 kHz à 2 Vc-c. Note: (En fonction de l'oscillateur utilisé, certains appareils fournissent un courant continu lors de leur enclenchement. Par conséquent, il est préférable de raccorder l'oscillateur après avoir enclenché son alimentation.) • Ajuster le potentiomètre VR4 TRK GAN (gain de centrage de piste) de façon à ce que la figure de Lissajou sur l'oscilloscope devienne un cercle horizontal (déphasage 90°).  TP1 100kΩ (10:1) Broche 3 (TRK. IN) OSC 1,2kHz 2 Vc-c Broche 4 (GND) Broche 2 (TRK. ERR) 39kΩ (10:1) 0,001 μF X Y Fig. 9-7

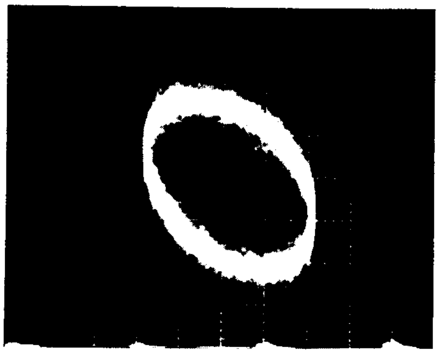


Photo. 9-13 Gain élevé

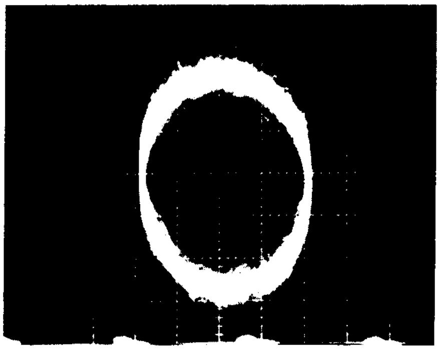


Photo. 9-14 Gain optimum

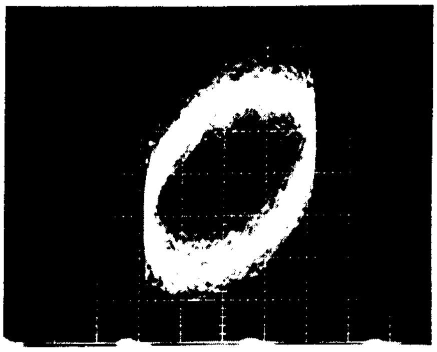


Photo. 9-15 Gain réduit

Pas No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
	V	H				
10.	**RÉGLAGE DE LA FRÉQUENCE PROPRE DU VCO**					
			TP2 Broche 2	VR8 (VCO.ADJ)	4.275 ±0.025 MHz	• Régler le mode d'essai (TEST). (Voir page 44) • Court-circuiter entre les ponts ASY et GND au moyen de l'outil de réseau, etc. (Figure 9-1) • Raccorder un fréquencemètre capable de mesurer au-dessus de 10 MHz à la broche 2 de TP2. • Ajuster le potentiomètre VR8 VCO ADJ (réglage du VCO) de façon à ce que la valeur indiquée par le fréquencemètre devienne égale à 4,275±0,025 MHz.
11.	**MÉTHODE DE CONTRÔLE DE LA CARACTÉRISTIQUE S (ERREUR DE FOCALISATION)**					
						• Régler le mode d'essai (TEST). (Voir page 44) • Réaliser un court-circuit entre la broche 5 FCS.IN (entrée de focalisation) de TP1 et la terre GND. • Appuyer sur la touche d'avance de piste (TRACK FWD) (▷▷|) et observer simultanément la forme d'onde à la broche 6 FCS.ERR (erreur de focalisation) de TP1 au moyen d'un oscilloscope.

9. AJUSTE

Los items de ajuste de este modelo deberán ser efectuados en el orden mostrado abajo.

• Itemes de ajuste y comprobación

1. Ajuste de desviación de seguimiento, foco y RF.
2. Ajuste del nivel de RF
3. Confirmación de la alimentación de salida de LD (diodo láser)
4. Confirmación de enclavamiento del enfoque y del eje
5. Ajuste del retículo
6. Ajuste del equilibrio de seguimiento
7. Ajuste tangencial
8. Ajuste de la ganancia de enfoque
9. Ajuste de la ganancia de seguimiento
10. Ajuste de la frecuencia propia de VCO
11. Método para confirmar el carácter S (error de enfoque)

• Equipo de medición

1. Osciloscopio de doble traza
2. Medidor de alimentación del láser
3. Disco de prueba (YEDS7)
4. Filtro de ajuste de equilibrio de seguimiento
5. Filtro de ajuste de ganancia de bucle
6. Generador de senñal
7. Contador de frecuencia
8. Otras herramientas generales

• Modo de prueba

Ajuste del modo de prueba y los procedimientos de cancelación

(1) Para disponer el mode de prueba, coloque en ON el interruptor POWER del reproductor (S401) mientras presiona el interruptor TEST MODE (S1). (terminales del modo de ajuste).

(2) Para cancelar el modo de prueba, simplemente gire el interruptor de POWER del reproductor a OFF.

Las varias funciones de tecla en el modo de prueba están enlistadas en la Tabla 9-1.

• Puntos de ajuste

VR1: Alimentación del láser
VR7: Desviación del seguimiento (TRK.OFS)
VR3: Ganancia de enfoque (FCS.GAN)
VR4: Ganancia de seguimiento (TRK.GAN)
VR5: Equilibrio de seguimiento (TRK.BAL)
VR6: Desviación de enfoque (FCS.OFS)
VR8: Ajuste de VCO
VR2: Compensación de RF (RF.OFS)

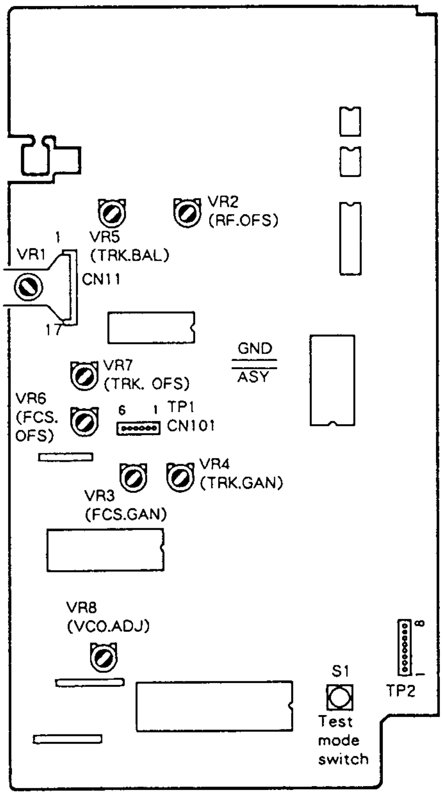
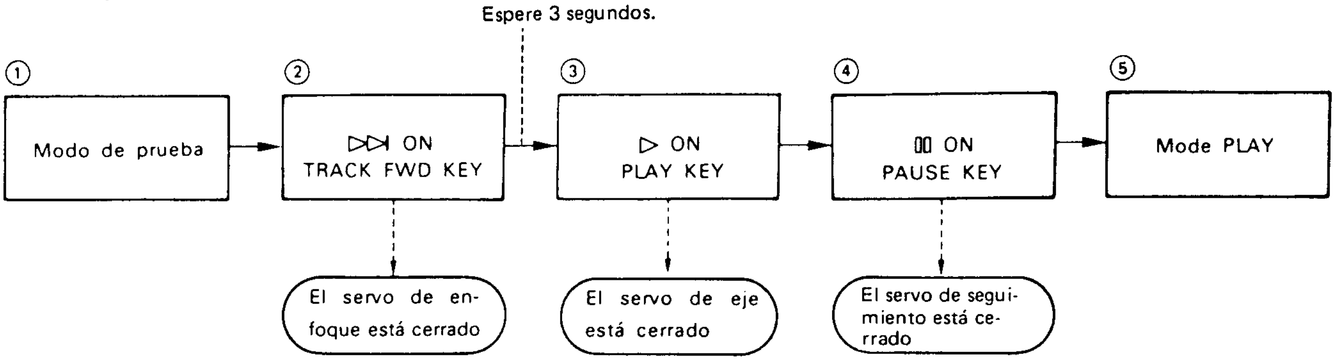


Fig. 9-1 Punto de ajuste

En el modo de prueba, cada servocircuito puede ser cerrado y abierto por operaciones separadas. Consecuentemente, cada servo deberá ser cerrado uno a la vez (en secuencia en serie) para ajustar el modo de PLAY (reproducción).
Fijese que el modo de PLAY no se activa simplemente presionando la tecla de PAUSE (pausa) (▯▯) en el modo de prueba.

Ejemplo: Conmutando del modo de STOP (parado) a PLAY.

- Cada servomecanismo funciona en una secuencia en serie en el modo de prueba.


Espere 3 segundos.
①
Modo de prueba
②
▷▷| ON
TRACK FWD KEY
③
▷ ON
PLAY KEY
④
▯▯ ON
PAUSE KEY
⑤
Mode PLAY
El servo de enfoque está cerrado
El servo de eje está cerrado
El servo de seguimiento está cerrado

• Funciones de tecla en el modo de prueba

Símbolo	Nombre de tecla	Función durante el modo de prueba	Descripció
▷▷|	TRACK FWD	El servo de enfoque está cerrado.	El diode láser se enciende. El actuador se mueve arriba/abajo, luego se cierra el servo de enfoque.
▷	PLAY	El servo de eje está cerrado.	El eje comienza a rotar y se cierra el servo cuando se convierte en el modo de servo CLV-A.
▯▯	PAUSE	El servo de seguimiento está cerrado/abierto	Ejecuta la operatión de conexión oscilante. Cuando se cierra el servo de seguimiento y se pone en el modo de PLAY presionando esta tecla (el servo de enfoque y el del eje deberán estar cerrados), y el indicador de pausa se enciende. El servo de seguimiento se abre presionando de nuevo la tecla.
◁◁	MANUAL SEARCH REV	El carro se mueve en la dirección inversa (hacia el centro del disco)	El carro se mueve hacia el centro del disco a una alta velocidad de como 3 cm/seg. Ya que no existe un mecanismo de seguridad para detener el carro, libere la tecla cuando el carro llegue al final.
▷▷	MANUAL SEARCH FWD	El carro se mueve en la dirección hacia delante. (hacia el final del disco)	El carro se mueve hacia el final del disco a una alta velocidad de como 3 cm/seg. Ya que no existe un mecanismo de seguridad para detener el carro, libere la tecla cuando el carro llegue al final.
□	STOP	PARADO	Todos los servos están abiertos.
⏏	EJECT	(Cargador de discos compactos)	El cargador de discos compactos. Sin embargo, el captador no regresa a su posición de aparcamiento. Además, aun cuando se cierra el disco el captador permanece tal como está.

Tabla 9-1

No. de paso	Ajuste del osciloscopio		Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
1	**AJUSTES DE COMPENSATION DE SEGUIMIENTO, FOCO Y RF**					
				VR5 (TRK.BAL)	45°	• Ajuste el modo de prueba. (Vea la página 55.) • Gire el volumen de TRK.BAL (Equilibrio de seguimiento) de VR5 en el sentido de las manecillas del reloj 45°del centro.
			Patilla 2 de TP1 (TRK. ERR)	VR7 (TRK.OFS)	0V±50 mV	• Ajuste VR7 TRK.ERR (de seguimiento) de modo que el voltaje en TRK.ERR (desviación de seguimiento) de la patilla 2 de TP1 se ponga en 0V±50 mV.
			Patilla 6 de TP1 (FCS. ERR)	VR6 (FCS. OFS)	Compens. de foco 0V ± 50mV	• Ajuste VR6 FCS.OFS (compensación de foco) de modo que el voltaje de FCS.ERR (error de foco) en la patilla 6 de TP1 sea 0V ± 50mV.
			Patilla 1 de TP1 (RF OUTPUT)	VR2 (RF OFS)	Compens. de RF 100mV ± 50mV	• Ajuste VR2 RF.OFS (compensación de RF) de modo que el voltaje de salida de RF en la patilla 1 de TP1 sea 100 mV ± 50 mV.
2	**AJUSTE DEL NIVEL DE RF**					
			Patilla 1 de TP1 (RF)	Alimentación del laser VR1	1.5Vp-p$^{+0.2}_{-0}$V	• Ajuste el mode de TEST. (Vea la página 55.) • Reproduzca el disco de TEST y conecte la sonda de un osciloscopio a la RF de la patilla 1 (Salida de RF) de TP1 y mida el voltaje de P-P de la forma de onda de RF. • Ajuste UR1 (alimentación del láser) que el valor sea 1.5Vp-p$^{+0.2}_{-0}$V.
3	**CONFIRMACION DE ALIMENTACION DE ALIDA DE LD (DIODO LASER)**					
					Confirmación Menos de 0,13 mW	• Ajuste el modo de prueba. (Vea la página 55.) • Presione la tecla de TRACK FWD (⏭) y encienda el LD (Diodo láser). • Ubique el sensor del medidor de potencia del láser inmediatamente arriba del objetivo, y confirme que la potencia de salida del LD sea menos de 0,13 mW.
4	**CONFIRMACION DE BLOQUEO DE ENFOQUE Y DEL EJE**					
					Existe salida de RF	• Ajuste del disco de TEST. • Ajuste del mode de TEST. (Vea la página 55.) • Cambie el captador cerca del centro del disco presionando la tecla de MANUAL SEARCH FWD (⏩). • Tenga en cuenta que este paso deberá ser ejecutado. • Observe RF (Radio frecuencia) de la patilla 1 de TP1 con un osciloscopio y confirme que se saque la senñal de RF después de presionar la tecla de TRACK.ERR (⏭).
	0,5V/div	100 mseg/div	Patilla 1 de TP1 (Salida de RF)		Rotación normal	• Presione la tecla de PLAY (▷) y asegúrese que el disco rota en la dirección normal casi a la velocidad especificada (tal como está cerca del centro del disco, la velocidad de rotación es alrededor de 30 rpm) y que no rote anormalmente o inversamente.

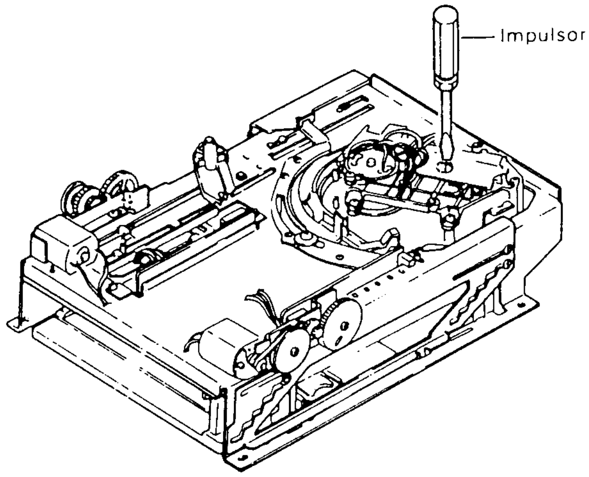
<table>
<tr><th rowspan="2">No. de paso</th><th colspan="2">Ajuste del osciloscopio</th><th rowspan="2">Puntos de prueba</th><th rowspan="2">Puntos de ajuste</th><th rowspan="2">Items de verificación/ Especificaciones de ajuste</th><th rowspan="2">Procedimiento de ajuste</th></tr>
<tr><th>V</th><th>H</th></tr>
<tr><td>5</td><td colspan="6">AJUSTE DE LA MIRA</td></tr>
<tr><td></td><td colspan="5">


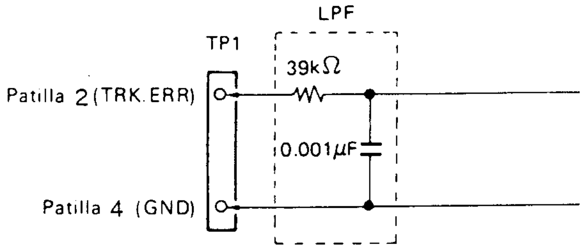
Fig. 9-2


Fig. 9-3
</td><td>• Ajuste el mode TEST. (Vea la página 55.)
• Cambie el captador cerca del centro del disco presionando la tecla de MANUAL SEARCH FWD (▷▷) de modo que el tornillo de ajuste de retículo del captador pueda ser visto a través del orificio oval en el lado superior del servomecanismo.
• Inserte el tornillo (—) en el orificio del lado superior o del mecanismo come se muestra en la Fig. 9-2, y confirme que gira el tornillo de retículo.
• Presione la tecla de TRACK FWD (▷▷|) y la tecla de PLAY (▷) secuencialmente y cierre el servo de enfoque y el del eje. (No cierre el servo de seguimiento.)
• Observe la forma de onda en TRCK.ERR (Error de seguimiento) de la patilla 2 de TP1 con un osciloscopio. Luego inserte un filtro de paso bajo de corte. (Fig. 9-3)</td></tr>
<tr><td></td><td>0.5V/div</td><td>5 ms/div</td><td>TRK.ERR de la patilla 2 de TP1</td><td>Retículo</td><td>Punto cero
Amplitud máxima</td><td>• Gire el tornillo (—) y encuentre el punto cero (Foto. 9-1)
• Luego, gire lentamente el tornillo (—) hacia el seutido contrario del reloj desde el punto cero y ajuste en el punto donde la forma de onda (señal de error de seguimiento) primeramente se ponga a una amplitud máxima. (Vea Foto 9-3)

Nota:
Si el tornillo (—) se presiona fuertemente, el captador se mueve hacia el centro del disco, por consiguiente el ajuste resulta dificil.

• Finalmente, asegúrese de confirmar que la señal de error de seguimiento (en este momento, no se ha insertado el filtro de paso bajo de corte de 4 kHz) cuando el captador se mueve hacia el centro del disco y el voltaje de P-P do la señal de error de seguimiento en la circunferencia exterior del disco no haya variado considerablemente. Cuando se desvía el nival arriba de ±10%, ajuste de nuevo girando el tornillo de retículo a un punto de amplitud de error mínimo.</td></tr>
</table>

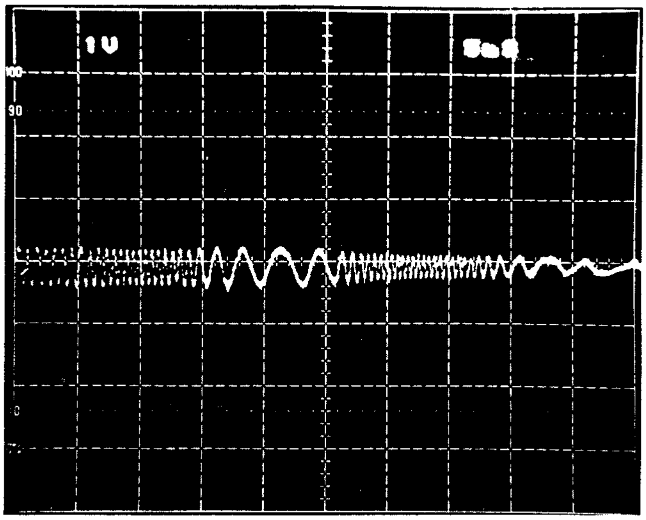


Foto. 9-1 Punto cero

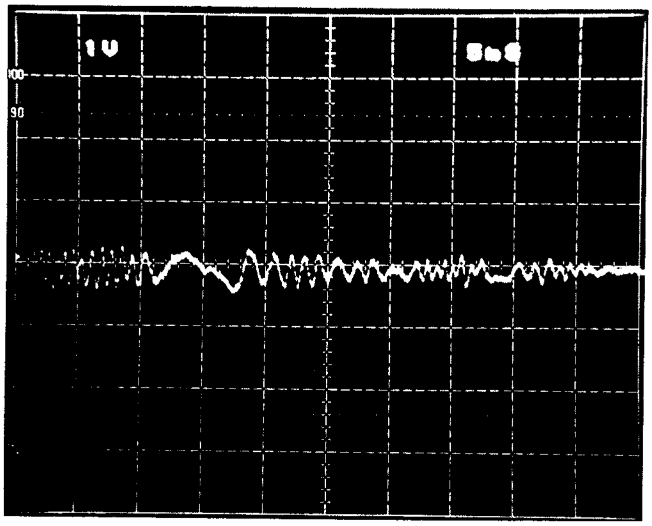


Foto. 9-2 Forma de onda de un punto no cero

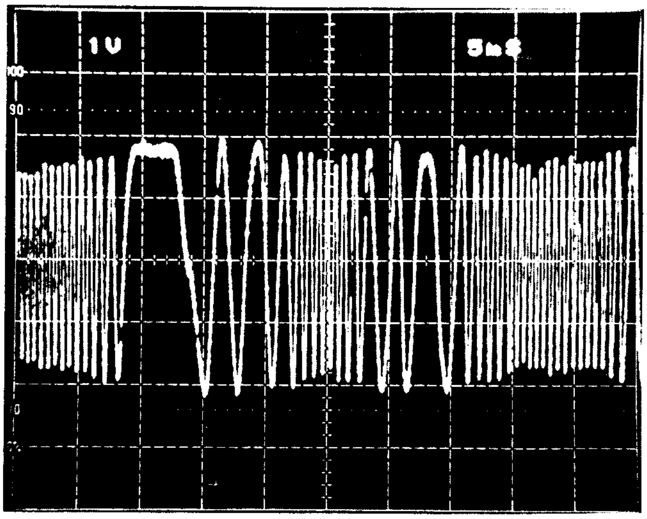


Foto. 9-3 Amplitud máxima

No. de paso	Ajuste del osciloscopio		Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
6	**AJUSTE DE EQUILIBRIO DE SEGUIMIENTO**					
	0,5V/div	5 mseg /div	Patilla 2 de TP1 (TRK.ERR)	VR5 (TRK.BAL)	TRK.ERR	• Ajuste el disco de TEST. • Ajuste el mode de TEST. (Vea la página 55.) • Cambie el captador cerca del centro del disco presionando la tecla de MANUAL SEARCH FWD (▷▷). • Presione la tecla de TRACK FWD (▷▷|) y la tecla de PLAY (▷) para comenzar a voltear el disco. • Obseve TRK.ERR (Error de sequimiento) de la patilla 2 de TP1 con un osciloscopio y ajuste con el volumen de TRK.BAL (Equilibrio de seguimiento) de VR5 de modo que la componente de CC del error de seguimiento desaparezca. Nota: Antes de realizar los ajustes indicados arriba, asegúrese de compensar el error de seguimiento.

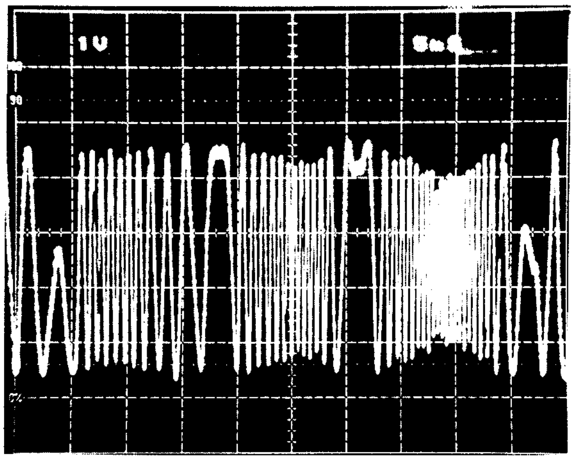


Foto. 9-4 Existe componente de CC

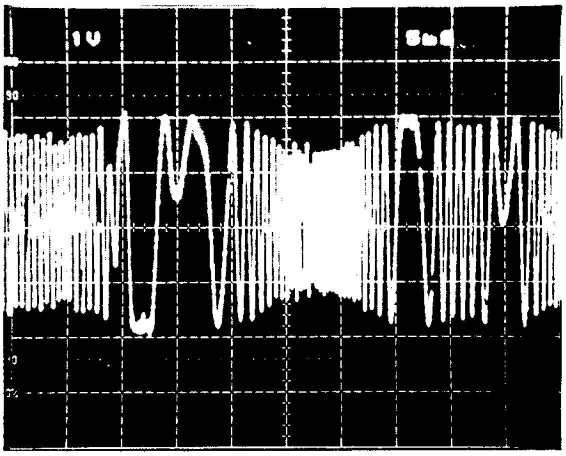
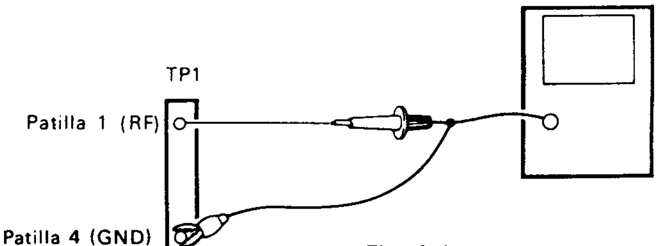
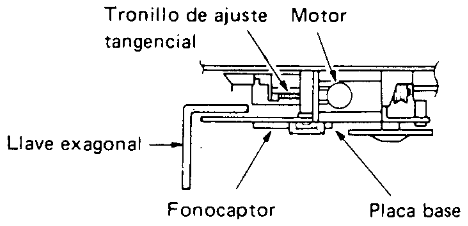


Foto. 9-5 No existe componente de CC

No. de paso	Ajuste del osciloscopio		Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
7	**AJUSTE TANGENCIAL**					
		200 nS	Patilla 1 de TP1 (Salida de RF)	Tornillo de ajuste de la tangencial	Mejor imagen de prueba	• Ajuste el disco de TEST. • Ajuste el mode de TEST. (Vea la página 55.) • Cambie el carro cerca del centro del disco presionando la tecla de MANUAL SEARCH FWD (▷▷). • Presione la tecla de TRAK FWD (▷▷|), la tecla de PLAY (▷) y la tecla de PAUSE (⏸) secuencialmente, y cierre todos los servos. (El indicador de pausa se enciende.) • Observe el RF de la patilla 1 (Salida de RF) de TP1 con un osciloscopio y ajuste con el tornillo de la tangencial de modo que la imagen de prueba resulte nítida. (Fig. 9-4) • El punto de ajuste es el punto medio entre el punto donde la imagen de prueba se deteriora girando el tornillo de la tangencial en el sentido de las manecillas del reloj, y el punto donde la imagen de prueba se deteriora girando el tornillo de la tangencial en contra del sentido de las manecillas del reloj. Como un criterio, observe que la forma de onda en conjunto sea nítida y que una de las figuras de diamante esté dentro de la imagen de prueba (Foto. 9-6), y ajuste al punto óptimo donde la forma de diamante se vea relativamente como una línea fina.  Fig. 9-4 (Nota) Durante el ajuste, sostenga la llave hexagonal hacia arriba para evitar que el cuerpo del captador vaya hacia abajo.


Tronillo de ajuste tangencial
Motor
Llave exagonal
Fonocaptor
Placa base

En la figura siguiente, las partes superior e inferior son opuestas a las del producto real.

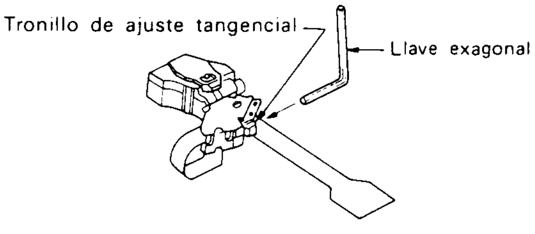

Tronillo de ajuste tangencial
Llave exagonal

Fig. 9-5 Ajuste tangencial

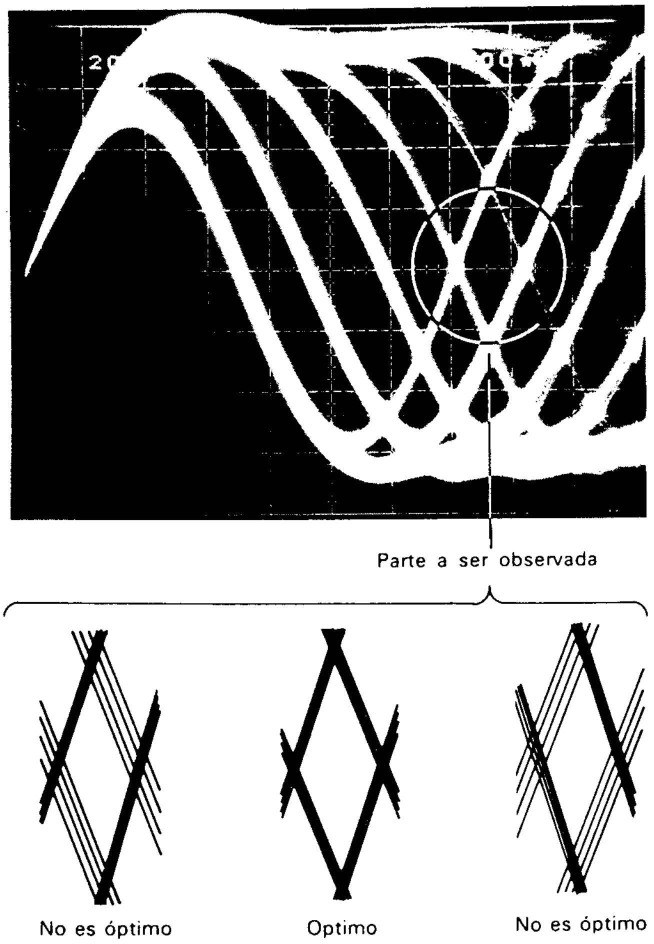

Parte a ser observada
No es óptimo
Optimo
No es óptimo

Foto. 9-6

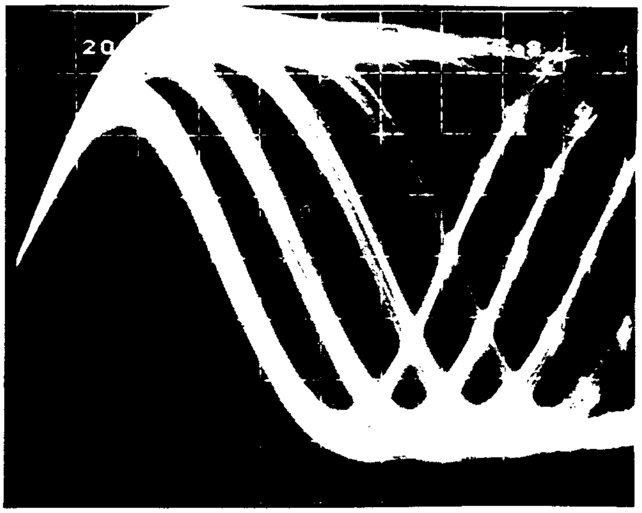


Foto. 9-7

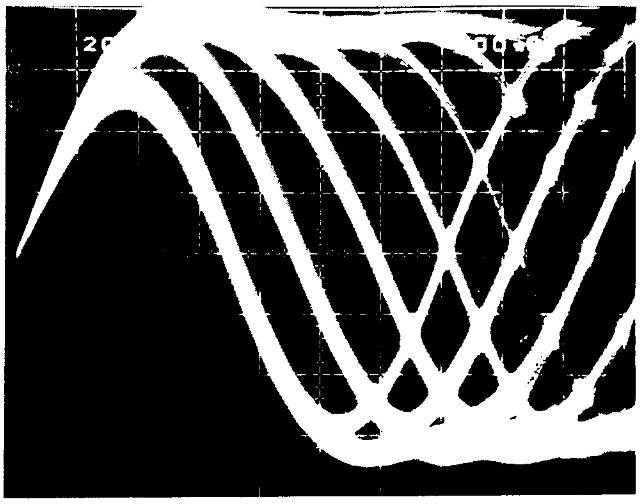


Foto. 9-8

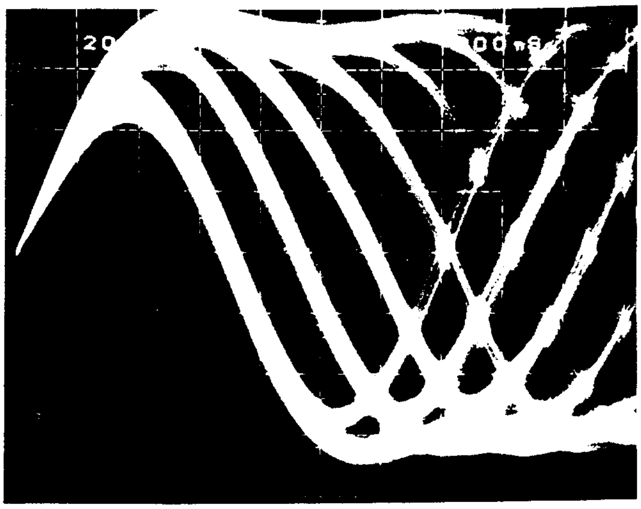
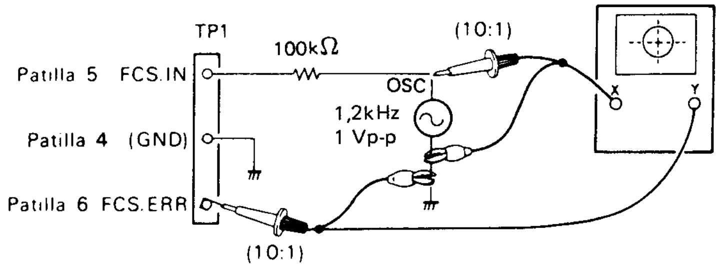


Foto. 9-9

No. de paso	Ajuste del osciloscopio		Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
8	**AJUSTE DE GANANCIA DE ENFOQUE**					
	20 mV/div.5/mV/div. CH1 (X), CH2 (Y) (SONDA 10:1)		Eje X Patilla 5 de TP1 (FCS.IN) Eje Y Patilla 6 de TP1 (FCS.ERR)	VR3 (GANACIA FCS)	Diferencia de fase 90°	• En el estado de POWER OFF (apagado), conecte el osciloscopio y el oscilador como se muestra en la Fig. 9-6. • Ajuste el modo de PLAY. • Encienda el power del oscilador y extraiga 1,2kHz 1 Vp-p. Nota: (Dependiendo en los osciladores, algunos de ellos producen CC cuando son encendidos. Por lo tanto, es conveniente conectar el oscilador después del encendido.) • Ajuste con el volumen de FCS.GAN (Ganancia de enfoque) de VR3 de modo que la figura de Lissajous del oscilloscopio a ser un círculo horizontal (90° de diferencia de fase).  TP1 100kΩ (10:1) Patilla 5 FCS.IN OSC 1,2kHz 1 Vp-p Patilla 4 (GND) Patilla 6 FCS.ERR (10:1) X Y Fig. 9-6

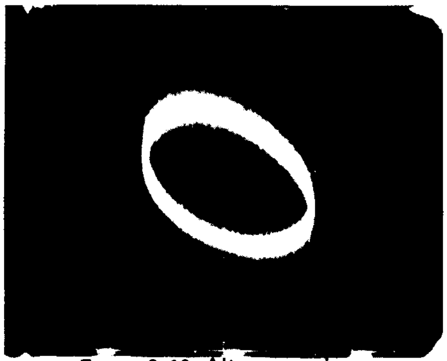


Foto. 9-10 Alta ganacia

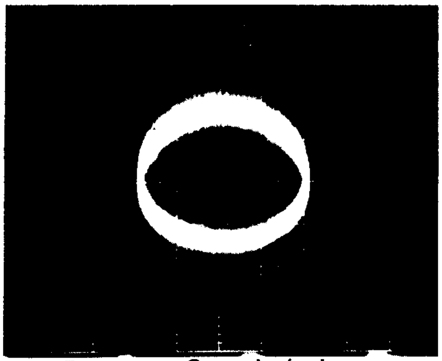


Foto. 9-11 Ganacia óptima

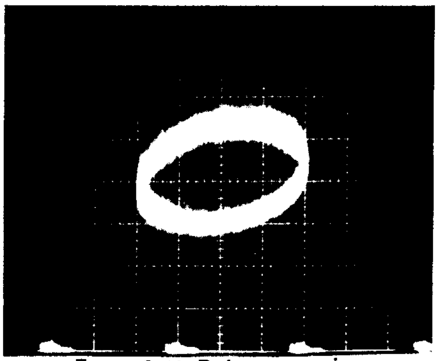
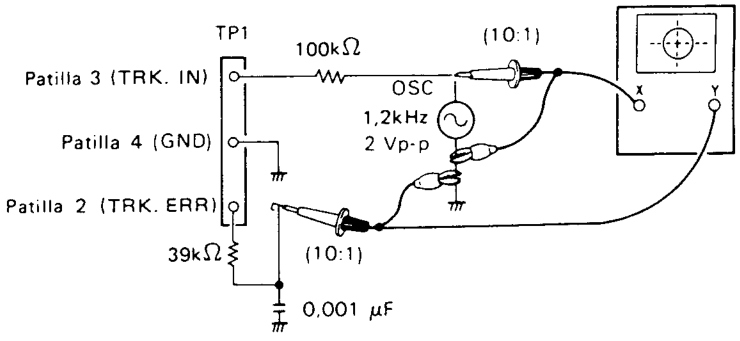


Foto. 9-12 Baja ganancia

No. de paso	Ajuste del osciloscopio		Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
9	**AJUSTE DE GANANCIA DE SEGUIMIENTO**					
	50 mV/div. 5 mV/div. CN1 (X), CH2 (Y) (SONDA 10:1)		Eje X Patilla 3 de TP1 (TRK.ERR) Eje Y Patilla 2 de TP1 (TRK.ERR)	VR4 (TRK.GAN)	90° de diferencia	• En el estado de POWER OFF (apagado), conecte un osciloscopio y un oscilador como se muestra en la Fig. 9-7. • Ajuste el modo de TEST. (Vea la página 55.) • Presione la tecla de TRACK FWD (⏭), la tecla de PLAY (▷), y la tecla de PAUSE (⏸) secuencialmente, y encienda el servo del enfoque, el del eje y el de seguimiento. • Encienda el oscilador y extraiga 1,2 kHz 2 Vp-p. Nota: (Dependiendo en los osciladores, algunos de ellos producen CC cuando son encendidos. Por la tanto, es conveniente conectar el oscilador después del encendido.) • Ajuste con el volumen de TRAK GAN de VR4 (Ganancia de seguimiento) de modo que la figura de Lissajous del osciloscopio llege a ser un círculo horizontal (90° de diferencia de fase).  TP1 Patilla 3 (TRK. IN) Patilla 4 (GND) Patilla 2 (TRK. ERR) 100kΩ 39kΩ 0,001 μF OSC 1,2kHz 2 Vp-p (10:1) (10:1) X Y Fig. 9-7

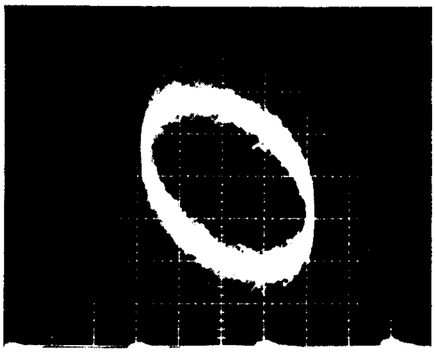


Foto. 9-13 Alta ganacia

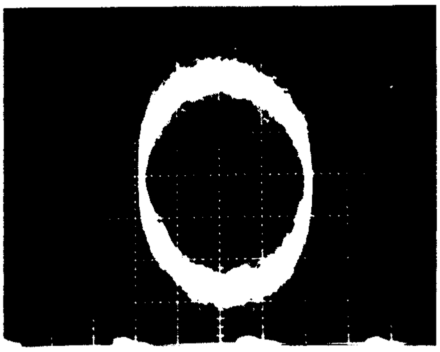


Foto. 9-14 Ganancia óptima

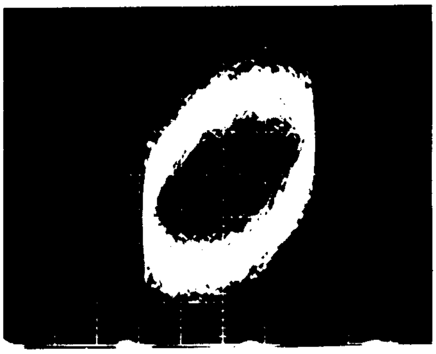


Foto. 9-15 Baja ganancia

No. de paso	Ajuste del osciloscopio		Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
10	**AJUSTE DE LA FRECUENCIA PROPIA DE VCO**					
			Patilla 2 de TP2	VR8 (VCO.ADJ)	4.275 ±0.025 MHz	• Ajuste el modo de TEST. (Vea la página 55.) • Haga un cortocircuito entre ASY y la conexión volante de GND con impulsor de retículo, etc. (Fig. 9-1) • Conecte el frecuencímetro, que pueda medir arriba de 10 MHz, a la patilla 2 de TP2. • Ajuste con el volumen VCO ADJ (ajuste de VCO) de VR8 de modo que el valor del frecuencímetro se ponga en 4,275 ±0.025 MHz.
11	**METODO PARA CONFIRMAR EL CARACTER S (ERROR DE ENFOQUE)**					
						• Ajuste el modo de TEST. (Vea la página 55.) • Haga un cortocircuito entre FCS.IN (Entrada de enfoque) de la patilla 5 de TP1 y GND. • Presione la tecla de TRACK FWD (▷▷|) y observe la forma de onda de FCS.ERR (Error de enfoque) de la patilla 6 de TP1 con un osciloscopio.

10. FOR HB, HP AND SD TYPES

10.1 CONTRAST OF MISCELLANEOUS PARTS

NOTES:

Parts without part number cannot be supplied.

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

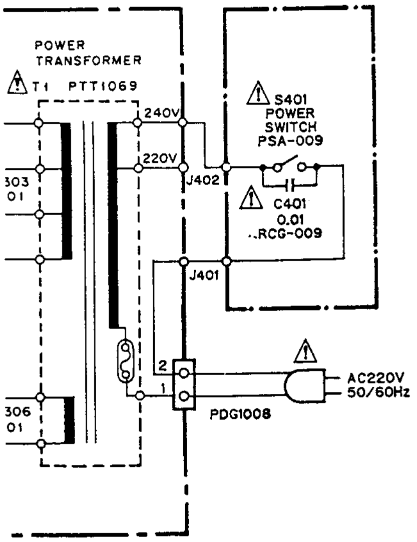
Shipment is made with the caution card affixed to the glass door.

The PD-Z82M/HB, HP and SD types are the same as the PD-Z82M/HEM type with the exception of the following sections.

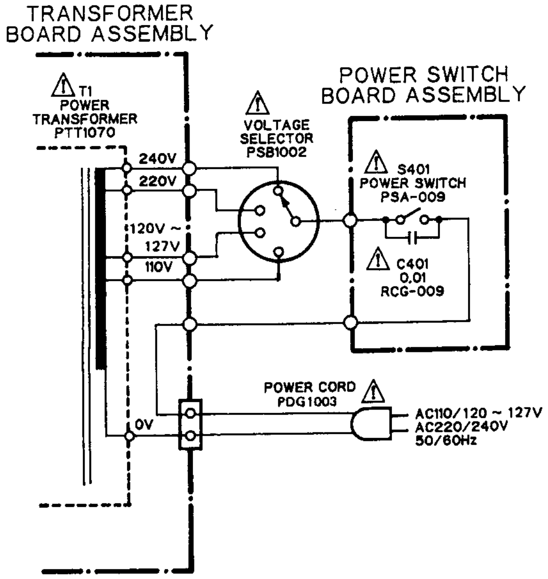
Mark	Symbol & Description	Part No.				Remarks
		PD-Z82M/HEM	PD-Z82M/HB	PD-Z82M/HP	PD-Z82M/SD	
⚠	AC power cord	PDG1008	PDG1021	PDG1011	PDG1003	
⚠	Power transformer (AC220/240V)	PTT1069	PTT1069	PTT1069	...	
⚠	Power transformer (AC110/120-127/220/240V)	...	...	...	PTT1070	
⚠	Line voltage selector (110/120-127/220/240V)	...	...	...	PSB1002	
	Operating instructions (English)	...	PRB1080	PRB1080	PRB1080	
	Operating instructions (English/French/German/Italian)	PRE1076	...	...	...	
	Operating instructions (Spanish)	...	...	...	PRC1005	

10.2 SCHEMATIC DIAGRAM

- **For HB and HP types**


POWER TRANSFORMER
⚠ T1 PTT1069
240V
220V
303
01
306
01
J402
J401
⚠ S401 POWER SWITCH PSA-009
⚠ C401 0.01 RCG-009
2
1
⚠
AC220V 50/60Hz
PDG1008

- **For SD type**


TRANSFORMER BOARD ASSEMBLY
⚠ T1 POWER TRANSFORMER PTT1070
240V
220V
120V ~ 127V
110V
0V
⚠ VOLTAGE SELECTOR PSB1002
POWER SWITCH BOARD ASSEMBLY
⚠ S401 POWER SWITCH PSA-009
⚠ C401 0.01 RCG-009
POWER CORD PDG1003 ⚠
AC110/120 ~ 127V
AC220/240V
50/60Hz

Line Voltage Selection (for HEM, HB and HP types)

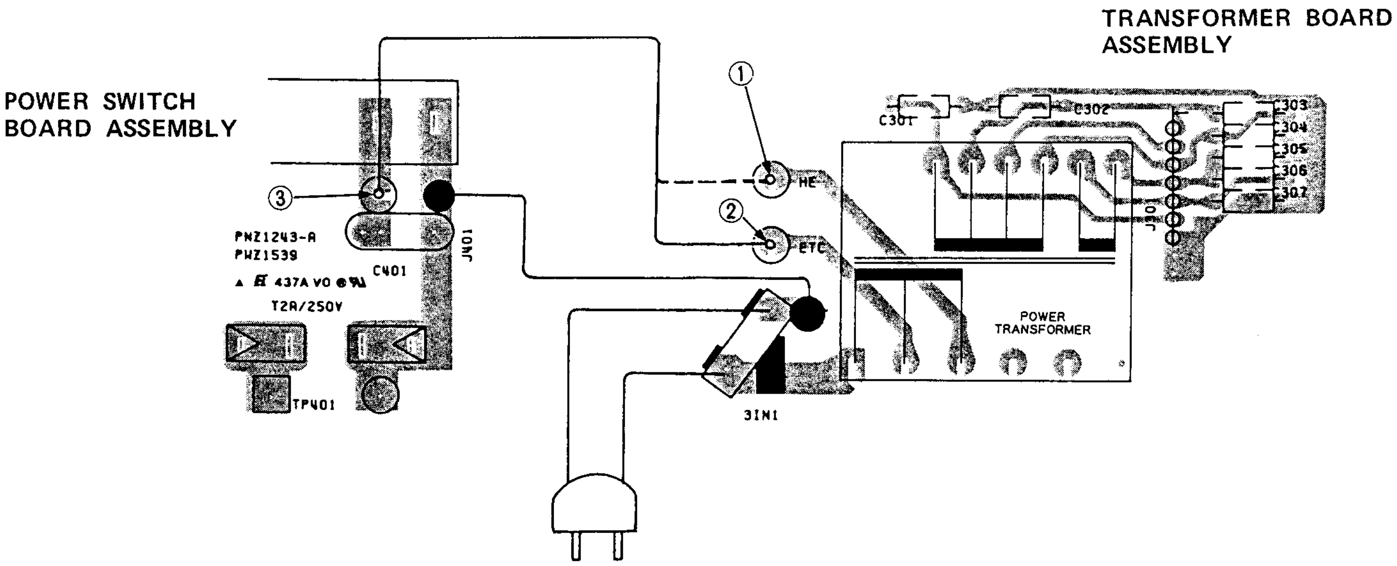
- Line voltage can be changed with the following steps.

1. Disconnect the AC power cord.
2. Remove the bonnet case.
3. Change the connection wire from Power switch board assembly (Terminal NO. ③) to Transformer board assembly (Terminal NO. ① or ②) as follows.

Voltage	Terminal NO. of Transformer board assembly
220V	①
240V	②

4. Stick the line voltage label on the rear panel.

Description	Part No.
220V label	AAX-193
240V label	AAX-192


TRANSFORMER BOARD ASSEMBLY
POWER SWITCH BOARD ASSEMBLY
①
②
③
HE
ETC
PNZ1243-A
PWZ1539
C401
J401
▲ 437A VO
T2A/250V
TP401
3IN1
C301
C302
C303
C304
C305
C306
C307
J301
POWER TRANSFORMER